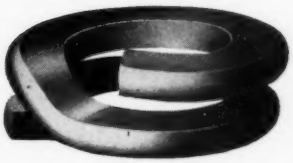
FEBRUARY, 1952

Railway Engineering and Maintenance

IMPROVED HIPOWER

SUPER HIPOWER

DOUBLE HIPOWER



THACKERAY

SUPER COLLAR GROOVED

NATIONAL COLLAR GROOVED

6 MAINTENANCE COST REDUCERS

Here are six outstanding types selected from our complete line of railway spring washers. Any one will reduce maintenance cost somewhere on your road. These six meet practically every railway need —whether it be for reduction of maintenance on straightaway or tangent tracks, for frogs and crossings, for anchor screw spikes.

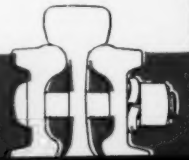
National's spring washers are used extensively—used by many many roads—along thousands and thousands of miles of track—on frogs and crossings throughout the world.

They have been tested, tried and found more than adequate.

If you use one or only a few of these great railway spring washers let our engineers discuss with you the other types that could further reduce your maintenance costs.

IMPROVED HIPOWERS

IMPROVE TRACK



THE NATIONAL LOCK WASHER COMPANY, NEWARK 3, N.J., U.S.A.

A COMPLETE LINE OF RAILWAY SPRING WASHERS

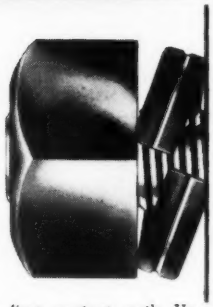
how RELIANCE hy-pressure hy-crome spring washers

hold maintenance costs *down*

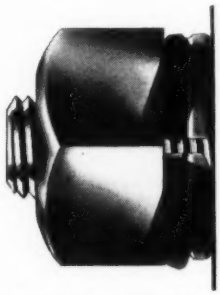
Reliance Hy-Pressure Hy-Crome Spring Washers act as hardened thrust bearings, permitting the application of greater tightening torque, while keeping joint assemblies under tension and retarding wear.

When Reliance Hy-Pressure Hy-Crome Spring Washers are tightened, the powerful reactive force stored up within the heat-treated helical-coil spring steel sections exerts constant and automatic pressure under the nut, keeping the assembly under tension despite wear and service stress. As a result, less maintenance tightening is required and a better rail-end condition and longer joint-bar life are obtained, reducing maintenance costs.

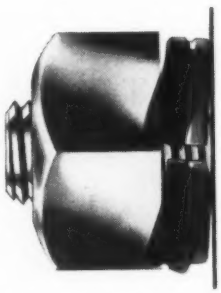
Convince yourself: use Reliance Hy-Pressure Hy-Crome Spring Washers on the toughest stretch of track and reduce your maintenance costs. There are other types of Hy-Crome Spring Washers for special railroad service application.



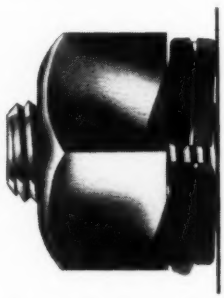
1. Nut makes first contact with Hy-Pressure Hy-Crome Spring Washer. Tightening compression begins.



2. Nut wrenched tight. Hy-Pressure Hy-Crome Spring Washer, fully compressed from original position shown in red, now exerts constant, non-fatiguing pressure against nut and joint bar.



4. Nut backed off one-half turn. Note that the assembly is still under adequate tension as shown in red.



3. After normal service wear. Note the reactive force still left in the Hy-Pressure Hy-Crome Spring Washer as indicated in red, keeping assembly under tension.

EATON

EATON MANUFACTURING COMPANY

RELIANCE DIVISION, MASSILLON, OHIO

Sales Offices: New York, Cleveland, Detroit, Chicago, St. Louis, San Francisco, Montreal

What a Beating this Guard Rail Can Take!

Here's about the sturdiest, toughest guard rail ever built. Even vicious side-thrust can't budge it. Can't turn it over. It's so shock-resistant that daily pounding by high-speed traffic doesn't jolt it out of alignment.

You probably recognize this guard rail . . . the Bethlehem Hook-Flange type. But, if you've never studied it before, note how the flange dips under the base of the running rail. There it's always pinned down by the weight of the passing train, so that no amount of thrust can knock it out of place.

There are four designs of Bethlehem's Hook-Flange Guard Rail. The model shown here is the 751—a popular rigid type with heavy welded side braces and double-shouldered tie plates in the straight guarding zone. The 751 is of course available in several different sizes to meet the requirements of individual railroads.

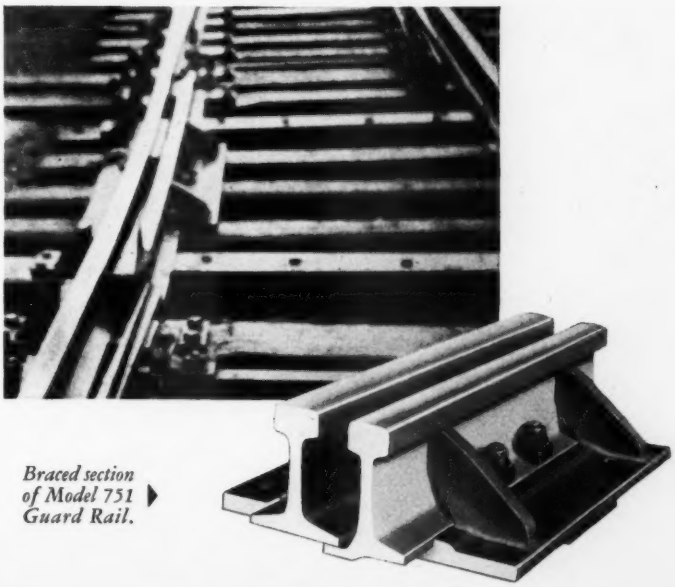
Ask for a copy of Folder 555. It contains much helpful information, with a full diagrammatic page devoted to lengths and settings of Hook-Flange Guard Rails.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

Completely-assembled Model 751, 9-ft length, with running rail in place.



Braced section of Model 751 Guard Rail.

Published monthly by Simmons-Boardman Publishing Corporation, 79 W. Monroe St., Chicago 3, Ill. Subscription price: United States and Possessions, and Canada, one year $2.00 (special rate to railroad employees only, one year $1.00). Single copies 50 cents. Entered as second-class matter January 20, 1933, at the post office at Chicago, Ill., under the act of March 3, 1879, with additional entry at Bristol, Conn. Volume 48, No. 2.

Ingersoll-Rand Heavy Duty

AIR TAMPING GUN

Speeds up jobs where tie tamping is toughest

DOUBLE POWER

for tighter tamping!

THE NEW MT8 gives you twice the power of standard tamping guns. It's designed to insure better work at fixed elevations! It is also an excellent tool for spot tamping under difficult ballast conditions!

The trend today is toward heavier rails and longer ties to meet increased traffic. Tighter tamping that stands up longer is a "must" these days.

That's why the powerful I-R MT8 Tamping Gun does a better job for you. Although it develops twice the power of the standard tamping guns, it only weighs 14½ pounds more, and is well-balanced for easy handling. Standard tamping steels are used.

Give the new MT8 a try-out and notice its low air consumption. You can operate two of these extra powerful guns from one portable 3R36 Spot Air Compressor!

Get full details on the MT8 from your nearest I-R branch office. You'll get prompt attention if you call, write or wire.

It's *New!*

Compact . . .

Extra-powerful . . .

Convenient throttle is protected . . .

Air inlet quickly changed to left-hand operation . . .

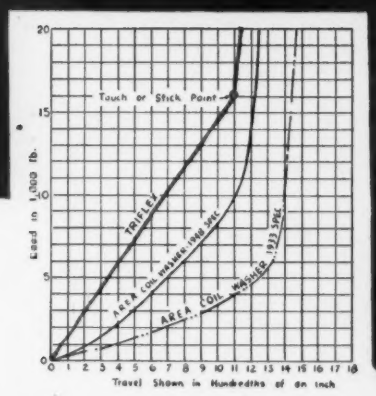
Handles easily!

Ingersoll-Rand ORIGINATOR OF MECHANICAL TAMPING

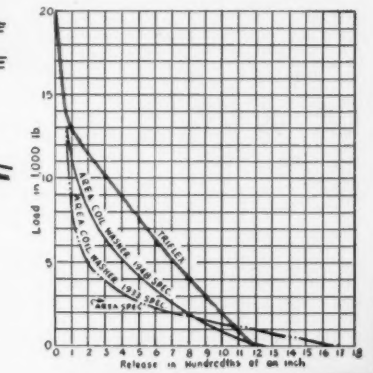
11 Broadway, New York 4, N. Y. 732-11

COMPRESSORS • AIR TOOLS • ROCK DRILLS • TURBO BLOWERS • CONDENSERS • CENTRIFUGAL PUMPS • DIESEL AND GAS ENGINES

FACTS ABOUT TRACK WASHERS.


Touch or Stick Point
TRIFLEX
AREA COIL WASHER 1948 SPEC.
AREA COIL WASHER 1933 SPEC.
Load in 1,000 lb.
Travel Shown in Hundredths of an Inch

These charts show the results of laboratory tests. Note the uniform and continuous travel of the *Triflex* to a point of fixed tension (above) and its high reactive pressure (below) in test by the AREA Track Committee. (See pp. 639-647 incl.) AREA Proceedings 1947.



Laboratory Tested... and Track-Tested, too!

The Verona *Fixed* Tension Triflex Spring helps eliminate running expansion and contraction, requires less wrenching to install, *less wrenching to maintain.*

Woodings-Verona
TOOL WORKS

Pennsylvania Railroad solves

rking in root-matted clay
" easily self-loaded 4.5 pay
s. in 120'. Ave. loading
e: 54 sec. When going is
t and slick, Tournamatic
ferential automatically de-
ers up to 4 times the trac-
e effort of slipping wheel
wheel on firmer footing.

Uses D Tournapull to cut berm ditches

For nearly a quarter century the Pennsylvania Railroad's Eastern Region has maintained an extensive drainage program. Excessive cost for this work has long been a problem. Work trains and numerous off-track loading and hauling methods have been used, but costs remained high. Recently they found an answer when they put a 7-yd., high-speed, D Tournapull in use constructing berm ditches along right-of-way at St. Thomas Cut, east of mile post 20, between Thorndale and Morrisville, Pa. This section of their heavy tonnage track carries practically all freight from western points into the New York terminal, handling over 50,000,000 gross tons each year.

Here's one-man "D" performance:

As shown on sketch, berm ditch was cut out at top of bank on west-bound side of double track roadbed. Material was clay containing a great amount of roots. Self-loading 4.5 yds. at a high point near single-lane bridge, "D" hauled 1400 ft. on same side of track, spread dirt to build up bank in low area.

After spreading at fill, D Tournapull made a 90° "U" turn—returned about ¼ the distance on haul road, then climbed to top of bank and continued to load area . . . again making a sharp "U" turn to self-load. Average time on the 2800 ft. cycle was only 3 min. 10 seconds. On basis of 50-min. hour, one-man "D" moved 15.7 loads or 70.6 pay yds. hourly.

Averages 16.5 m.p.h. cycle speed

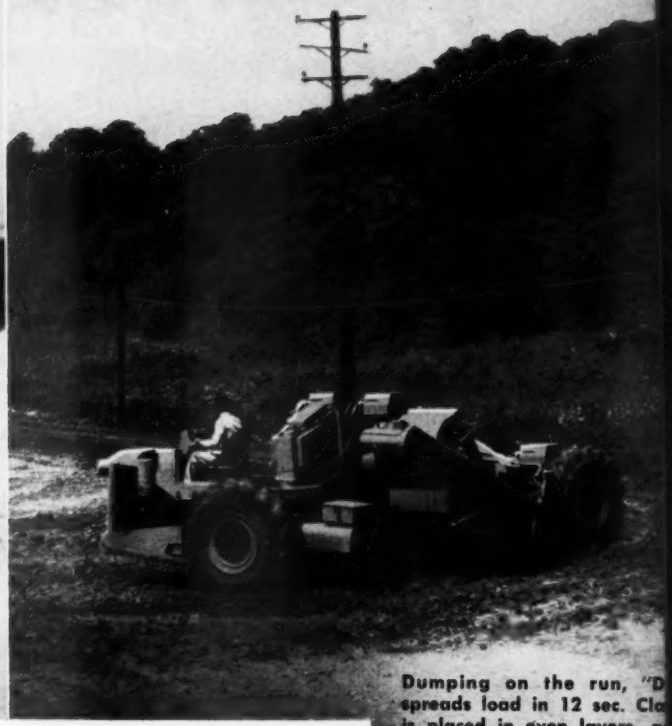
Because of its exceptional rubber-tired maneuverability, speeds to 28 m.p.h., and electric, push-button controls of all scraper operations for loading and spreading, the "D" averaged 16.5 m.p.h. throughout the entire 2800-foot cycle. Resulting production per man and savings per yard were substantial.

LETOURNEAU

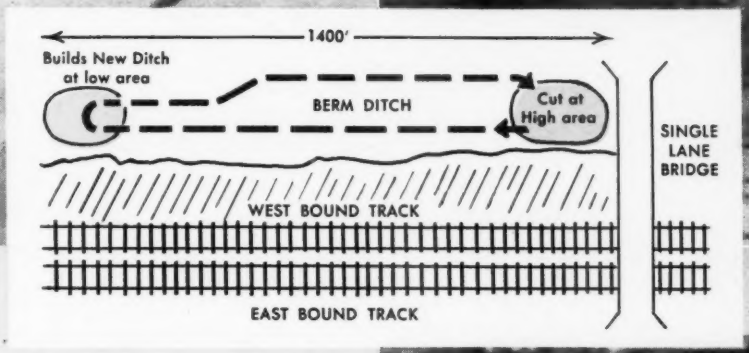
R. G. LeTOURNEAU, INC., Peoria, Illinois

drainage problems

28 m.p.h. "D" averaged 16.5 m.p.h. on 2800-foot cycle for entire load, haul, spread and return. Powerful air brakes, plus fingertip electric power steer, gave operator safe control at all times for high speed travel even on restricted ditch. One man "D" can be driven job-to-job under own power and carry its own supplies.

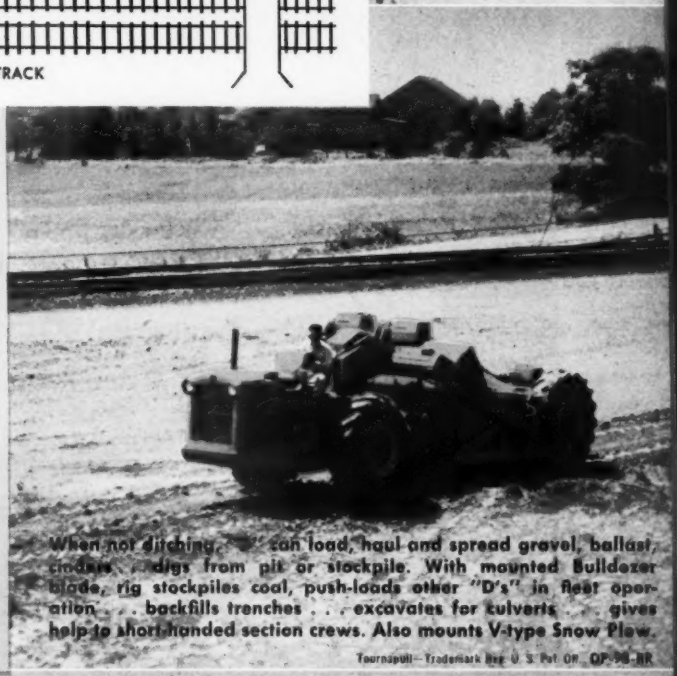


Dumping on the run, "D spreads load in 12 sec. Cla is placed in even layers, a curately controlled in depth Excellent maneuverability an ability to make sharp 90 turns lets rig work in restricte cuts or narrow fills . . . tak sharp curves, turn safely o steep grades or over single lane haul roads.



With versatile "D", there's no interruption to train schedules. There is no running to rail sidings and holding up work crews while trains roll by. When job is completed, operator drives 28 m.p.h. to next task. Big, low-pressure tires cross tracks and follow rail lines anywhere without damage to rails, switches, etc. "Drive-anywhere" ability gives you benefits of faster, more efficient maintenance at lower cost. At a moment's notice unit may be dispatched to handle a variety of jobs: preparing new roadbeds and relocations . . . transporting ballast . . . repairing washouts . . . trimming side slopes . . . maintaining cuts, fills, bridge approaches . . . stockpiling and reclaiming coal, etc.

Be sure to contact your LeTourneau Distributor for all the facts on this time and money-saving one-man working crew . . . you'll find it the handiest tool in your inventory.



When not ditching, "D" can load, haul and spread gravel, ballast, cinders . . . digs from pit or stockpile. With mounted Bulldozer blade, rig stockpiles coal, push-loads other "D's" in fleet operation . . . backfills trenches . . . excavates for culverts . . . gives help to short-handed section crews. Also mounts V-type Snow Plow.

Tournapull—Trademark Reg. U. S. Pat. Off. OP-98-RR

Send Now to: R. G. LeTOURNEAU, INC., Peoria, Illinois

NAME_____ TITLE_____

COMPANY_____

Tell us more about 9-ton, 122 h.p. D Tournapull. . . . Also send data on:

TOURNAPULLS
☐ 14-yd. "C"

TOURNADOZERS
☐ 122 h.p. "D"

Gulf, Mobile and Ohio R. R.

Right-of-way maintenance or construction — whether its digging or cleaning drainage ditches — unloading rails or ballast — widening roadbeds or building bridges, gets the "Highball" when a Lorain is on the job.

Here a Lorain TL25K uses a dragline bucket to clean a ditch for G. M. & O. They know a Lorain will give fast, dependable, low-cost service — on or off the car, on or off the track, or in the yard. Because Lorain's carefully balanced, proven design, sturdy construction, and careful workmanship provide the same day after day, year after year dependability as the road itself.

That's why so many railroads use Lorains. Whether on crawlers, or rubber-tires, whatever the front end equipment, regardless of size, a Lorain keeps things on schedule. Why not get detailed information from the nearest of the 125 Thew-Lorain Distributor outlets.

THE THEW SHOVEL CO., LORAIN, OHIO

"HIGHBALLS" WITH LORAIN

TL 25

CHOOSE FROM

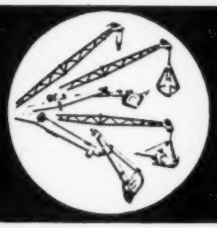
TURNTABLES
6 series — ½ to 2-yard classes; crane capacities up to 45 tons.

BOOMS
Shovel, crane, dragline, clamshell or hoe . . . all interchangeable.

CRAWLERS
Standard for general use; extra-long for draglines; extra-wide for trench digging.

RUBBER-TIRE MOUNTINGS
1 or 2-engine types, 2 or 3 axles; 2, 4 or 6-wheel drive arrangements.

THEW **LORAIN**®
on CRAWLER or RUBBER



SHOVELS
CRANES
DRAGLINES
CLAMSHELLS
HOES

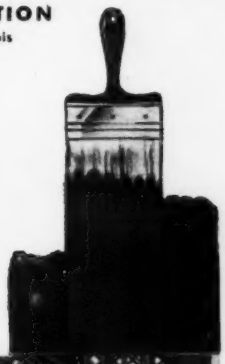
RUST-OLEUM lasts longer ...applied directly over rusted surfaces!

STOP RUST! with RUST-OLEUM

The Practical, Sensible Answer To Your Rust Problems!

Here's what RUST-OLEUM can do for you: (1) Cut your maintenance costs by saving you time, labor and money . . . because RUST-OLEUM may be *applied directly over rusted surfaces* by brush, dip or spray after wirebrushing and scraping with sharp scrapers to remove rust scale and loose rust! Costly sandblasting and chemical pre-cleaning are not usually required. (2) RUST-OLEUM *lasts longer* applied over surfaces already rusted. (3) RUST-OLEUM'S tough, elastic, rust-resisting film protects signal equipment, rolling stock, towers, bridges, metal buildings and all rustable metal surfaces. Get the complete story from a RUST-OLEUM Railroad Rust Preventive Specialist! See why major railroads throughout the nation rely on RUST-OLEUM.

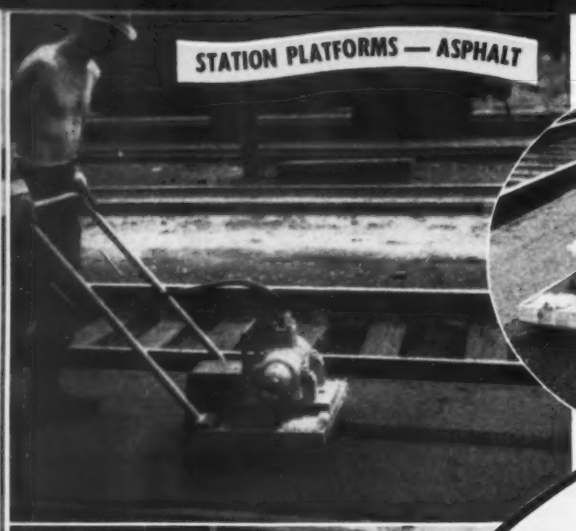
RUST-OLEUM CORPORATION
2546 Oakton Street • Evanston, Illinois

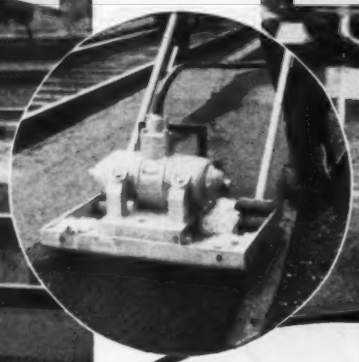


May be applied directly over rust

Available in all colors, Aluminum and White

Write for your **FREE COPY** *of the* **RUST-OLEUM** *Catalog,* **TODAY!**



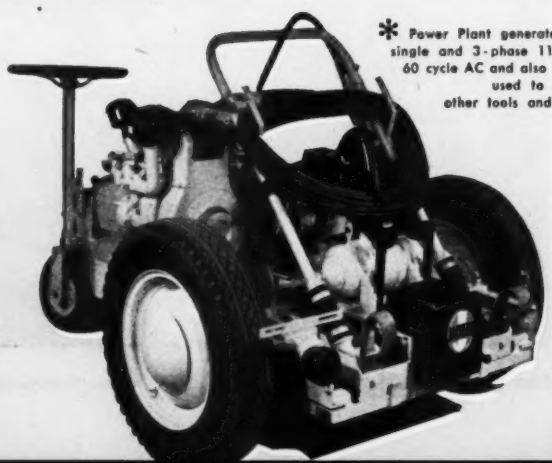


A Sensational Compactor of ASPHALT, ROCK-FILL and GRANULAR SOILS

It's faster, more mobile and more convenient than larger more expensive equipment for the compaction of asphalt in station platforms, street crossings and between rails in city streets. Equally advantageous in the compaction of rock-fills and granular soils in concrete floor sub-bases, bridge approaches, in trenches, close to footings etc. The Jackson Vibratory Compactor delivers up to 4500 1¾-ton blows per minute. It propels itself and will firmly compact 900 to 1200 sq. ft. per hour, closely approaching the theoretical density of the asphaltic mix being used; or, in the case of granular soils, 95 to 100% of maximum density as determined by accepted laboratory testing methods (A.A.S.H.O. T99-38, Cone, Vibratory Table). It operates on 3-phase, 110 v., 60 cycle AC from a *Jackson Power Plant mounted on an auto trailer equipped for quickly picking up and lowering the compactor. (Skid-mounting of Power Plant is optional.) Write for the complete facts concerning this relatively inexpensive compactor. It does a job that is unexcelled by equipment at any price and is a tremendous time and money saver.

SEE IT AT THE RAILWAY SHOW AT THE COLISEUM, CHICAGO

JACKSON VIBRATORS, INC.
LUDINGTON, MICHIGAN

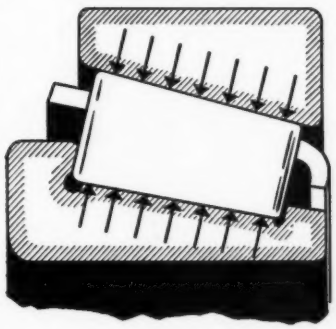


* Power Plant generates both single and 3-phase 110 volt, 60 cycle AC and also may be used to operate other tools and lights.

6 problems you can solve with TIMKEN® bearings

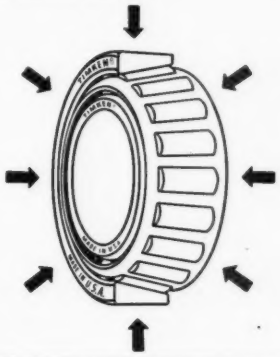
HEAVY LOADS

Loads carried on the rollers and races of Timken® bearings are spread evenly over a line of contact. The greater load area assures extra load-carrying capacity.



COMBINATION LOADS

Due to their tapered design, Timken bearings carry radial and thrust loads in any combination. No auxiliary thrust bearings or plates are needed.

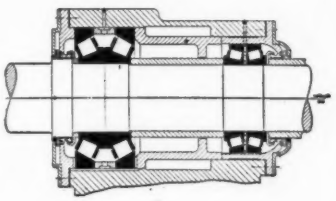


PRECISION

Timken bearings hold shafts in positive alignment, prevent end-movement, minimize deflection. Gears mesh precisely, assuring a smooth flow of power.

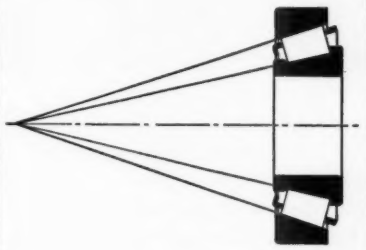
MAINTENANCE

Closures are more effective because Timken bearings keep housing and shaft concentric. Dirt and grit are kept out. Lubricants are kept in.



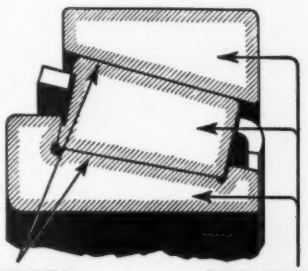
FRICTION

Timken bearings roll freely due to true rolling motion. Lines coincident with tapered surfaces of rollers and races meet at a common point on the bearing's axis.



WEAR

Rollers and races of Timken bearings are made of Timken fine alloy steel—case hardened for a hard, wear-resistant surface and tough, shock-resisting core.

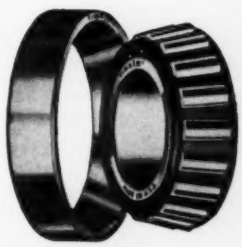


Be sure to specify Timken roller bearings for the machines you buy or build. Look for the trade-mark "TIMKEN" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

TIMKEN

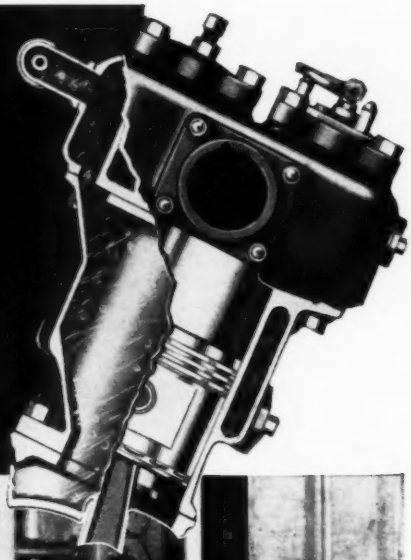
TRADE-MARK REG. U. S. PAT. OFF.

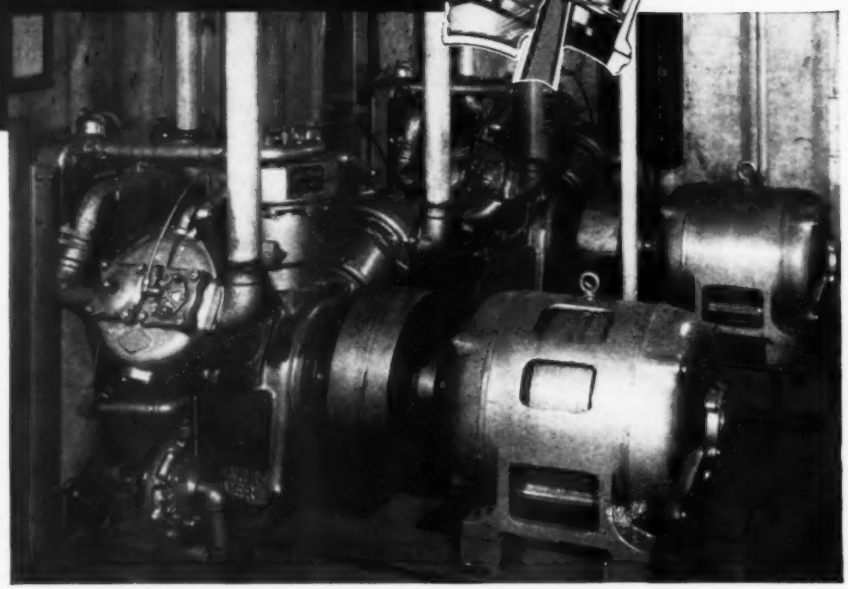
TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ◫ AND THRUST ←◫→ LOADS OR ANY COMBINATION ←◫→

what you should know about this WATER-COOLED COMPRESSOR CYLINDER ... and Why





These two WB units provide compressed air for yard facilities of the St. Louis-San Francisco Railway at Wichita, Kansas.

If you are looking for an air compressor that runs cooler, delivers cooler air, requires less lubricating oil and lasts longer—then get acquainted with the Gardner-Denver *Water-Cooled WB*.

Completely water-jacketed compressor cylinders keep operating temperatures lower—keep cylinder wall temperatures uniform. Since there is less cylinder distortion, close manufacturing tolerances can be specified. As a result, lubrication is improved, oil pumping is eliminated, and cylinder wear is minimized.

So select Gardner-Denver WB Two-Stage Water-Cooled Compressors for your shop and yard installations, and save money on your compressed air costs. Available with water tube intercooler—or with combination radiator-intercooler for remote installations or where good cooling water is scarce. Send today for Bulletin WB-10.

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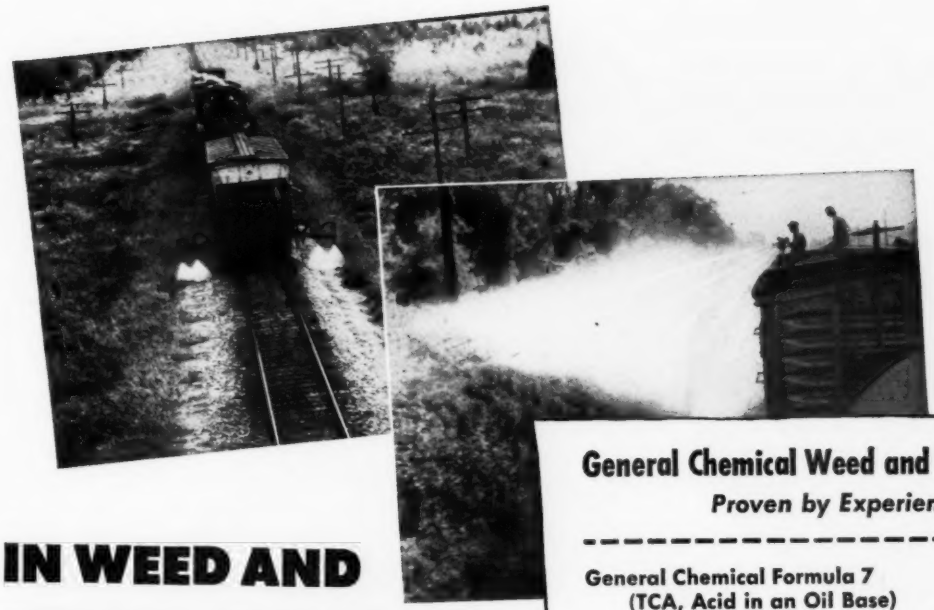
THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS

For additional information, use postcard, pages 157-158



IN WEED AND BRUSH CONTROL

Only "Custom Service" CAN GIVE *REAL* RESULTS

NO ONE herbicide can be a "cure-all" for the widely varying weed problems encountered by railroads from coast to coast.

That's why General Chemical has developed its *"Custom Service"* railroad weed control program... the *only* method for really effective results.

General Chemical tailors its program to meet the needs of the individual road. It uses only modern organic herbicides which research and experience have proved most suitable for specific vegetative and climatic conditions. Applications are made according to a carefully-planned spraying schedule, under the supervision of General's weed control specialists.

THE RESULT: You can get clean track immediately with high kill of weeds and grasses and continuous reduction in perennial root growth.

For full information, write today to—

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General Chemical Weed and Brush Killers

Proven by Experience

General Chemical Formula 7
(TCA, Acid in an Oil Base)
- For general purpose grass control.
- Used with one of the additives listed for over-all control of weeds.

General Chemical Formula 7 with 2, 4-D
- For use where grasses predominate, but includes sufficient 2, 4-D to control moderate infestations of broadleafed weeds.

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- For control of very resistant weeds and grasses. The amount of 2, 4-D has been increased and fortified by Pentachlorophenol.

General Chemical Sodium TCA (Liquid Concentrate)
- For soil treatment of noxious grasses.
- For all-purpose weed control when used with one of the ester additives listed.

General Chemical Emulsible PCP—Aromatic Oil
- Low cost contact type weed killer for use where weed and grass control problems are not severe... contains pentachlorophenol.

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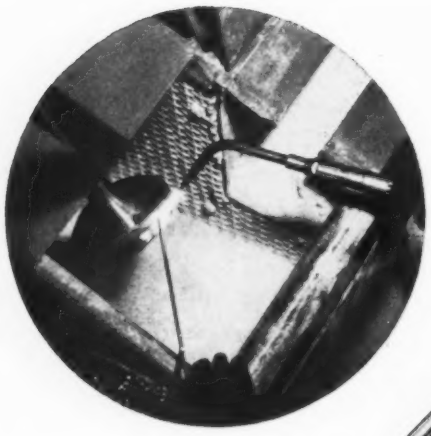
- For use with General Chemical Formula 7 or Sodium TCA where cotton or other plants susceptible to 2, 4-D are not present.

General Chemical 2, 4-D—2, 4, 5-T Ester Brush Killer
(Water Soluble)

GENERAL CHEMICAL WEED CONTROL



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no job too tough

Airco's versatile 800 torch meets the demands of today's speeded-up railway maintenance schedules. Flame-cleaning . . . brazing . . . hard-facing . . . welding the heaviest sections . . . whatever the work, in the shop or on the road, you can be sure that the "800" will handle it quickly and economically.

For long life, the torch head is made of durable monel. Sturdy brass forgings and seamless brass gas tubes stand up to the roughest handling. All components require little maintenance.

The "800" is unexcelled for brazing, or for straightening and bending operations. A wide range of tips is available. By adding a cutting attachment, the Airco 800 torch can be quickly converted to cut steel from thin sheets up to 6" plate—ideal for the occasional cutting job.

Dependable performance? You're sure of it from the 800 torch, thanks to Airco's 35 years of engineering know-how. Learn about Airco's complete line of arc and oxyacetylene equipment and supplies for railway track work or shop work. Get in touch with your local Airco office today. Representatives will be glad to help you with any welding or cutting problem.

Costs come down under the Airco plan

AIRCO

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AIR REDUCTION PACIFIC COMPANY
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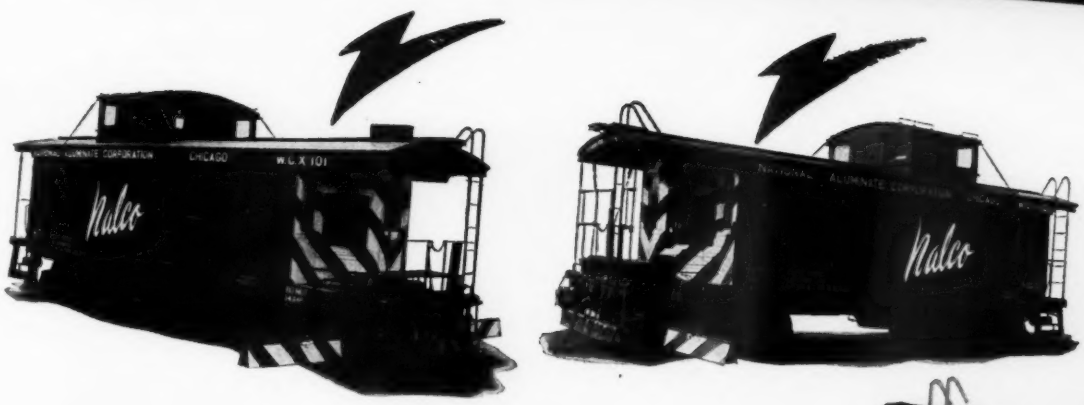

6 MORE REASONS for *Nalco* COMPLETE WEED and BRUSH CONTROL

Nalco Spray Cars, engineered to give precision chemical dosage and coverage, are added good reasons for using safe, powerful Nalco weed and brush control chemicals on your right-of-way.

Several Nalco formulas are available . . . specifics for grasses, weeds, annuals or perennials, and Nalco spray cars are equipped to spray two formulas simultaneously, when necessary, in correct proportions for effective control. Spray cars, each with precise metering and indicating equipment, are available without charge to railroads using Nalco weed control chemicals in tank car lots.

Write for data on spray car availability and Nalco chemicals to keep your right-of-way free of weeds and brush.

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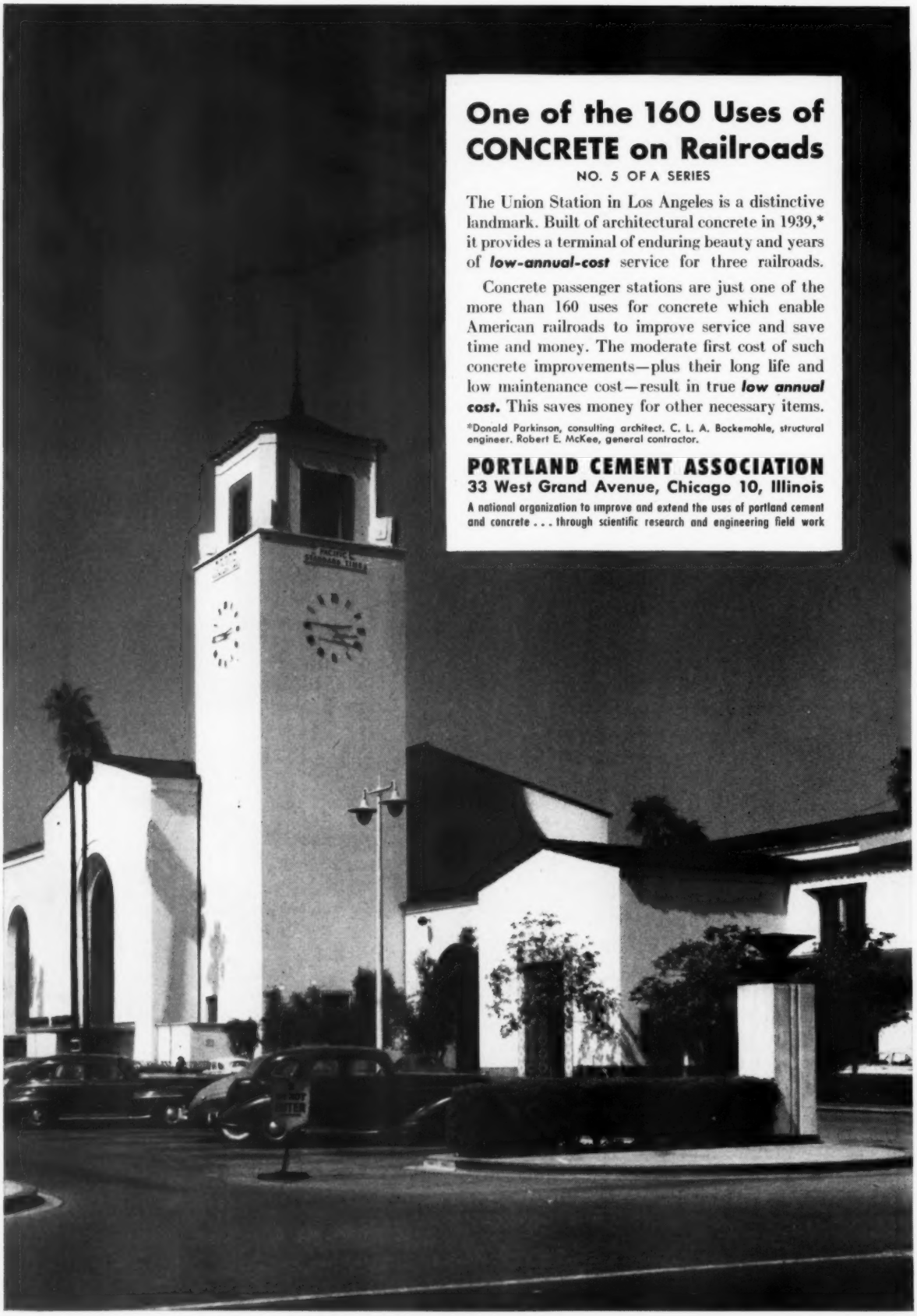
Canadian inquiries should be addressed to Alchem Limited, Burlington, Ontario

THE *Nalco* SYSTEM • Serving Railroads through Practical Applied Science

Six Nalco Spray Cars shown above have all gone into service within the past two years. Modern design, equipment and instrumentation assure maximum



One of the 160 Uses of CONCRETE on Railroads

NO. 5 OF A SERIES

The Union Station in Los Angeles is a distinctive landmark. Built of architectural concrete in 1939,* it provides a terminal of enduring beauty and years of ***low-annual-cost*** service for three railroads.

Concrete passenger stations are just one of the more than 160 uses for concrete which enable American railroads to improve service and save time and money. The moderate first cost of such concrete improvements—plus their long life and low maintenance cost—result in true ***low annual cost.*** This saves money for other necessary items.

*Donald Parkinson, consulting architect. C. L. A. Bockemohle, structural engineer. Robert E. McKee, general contractor.

PORTLAND CEMENT ASSOCIATION
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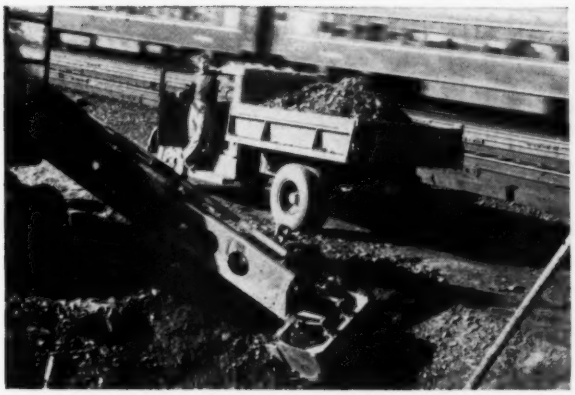
A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work



"Arm Action" tilts the bucket laterally to dress side slopes of drainage ditch.

Even under low-hanging power lines, the Gradall widens bottom and does a precision job following contours of this ditch.

A Gradall grooms the busiest stretch of track in the world!

The Gradall stretches far to do a fast, neat clean-out job on ditches.

See the Gradall
...at the National Railway Appliances Association Exhibition at the Chicago Coliseum, March 10-13.
Look for the Gradall on display at Booths 23-24-255.

EACH DAY about 400 passenger trains and 45 freight trains travel the high speed four-track electrified line between New York and Philadelphia. An elaborate system of right-of-way ditches with lead-off canals has the effect of turning the entire 91-mile stretch into a fill, for better roadbed stability and improved riding.

Gradalls, with their mobility and versatility, are used for earth moving and many other construction maintenance jobs.

Wherever Gradalls are used . . . by contractors, utilities, municipalities . . . actual cost figures prove that a Gradall pays and pays big!

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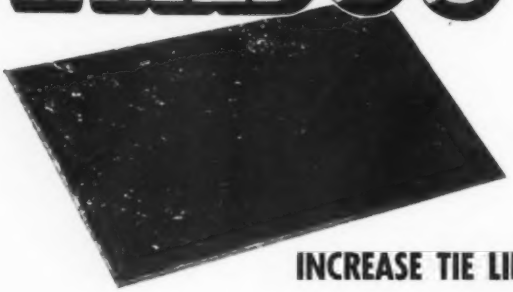
GRADALL—THE MULTI-PURPOSE CONSTRUCTION MACHINE *with Controlled Down Pressure*

FABCO TIE PADS *On Curves*



REDUCE MECHANICAL WEAR OF TIES

INCREASE TIE LIFE · REDUCE COSTS OF RE-GAUGING OF TRACK

Reduce Maintenance Costs Save Ties..Save Labor

ON Curves — FABCO Tie Pads function in two principal ways to reduce your costs. First, they reduce plate cutting, and thus extend the life of the tie. Second, they prevent the uneven cutting of the plate into the tie (which throws the track out of gauge) and thus reduce the cost of re-gauging.

Other Advantages of Fabco Tie Pads

FABCO Tie Pads are constructed to withstand severe, modern track conditions, such as high speeds, extremes of temperature, moisture, brine and sand. The resiliency of FABCO Tie Pads assures tight spikes at all times and permanent cushioning of the track. FABCO Tie Pads help in maintaining line and surface; permit use of smaller tie plates; compensate uneven surfaces; and old pads can be changed from one location to another — all making for low pad cost.

In view of the costs of ties and labor it is of the utmost importance to railroads to obtain maximum tie life. Over 16 years of practical experience in the use of our resilient pads in track applications has made us familiar with the essential requirements of track maintenance.

FABCO Tie Pads are recommended for use anywhere in open track. The most substantial savings can be effected on curves, bridges, insulated rail joints, switches, station tracks, and station approach tracks. These are the points of most acute tie wear, high tie costs and greatest re-gauging problems.

Ideally suited to engineering and construction requirements of maintenance of way.

It Pays to Specify **FABCO TIE PADS** *Made by the Makers of*

FABREEKA

PRODUCTS COMPANY, INC.

222-M SUMMER STREET, BOSTON 10, MASSACHUSETTS

NEW YORK · CHICAGO · DETROIT · SPARTANBURG

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FABCO TIE PADS • Used on Curves, Bridges, Insulated Rail Joints, Switches, Station Tracks, Station Approach Tracks, Open Track

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101 ALL NEW INSPECTION CAR

+ *Immediate Reverse*
+ *Wheel Silencers*
+ *Low Lifting Weight*

THIS IS THE CAR WITH MORE SAFETY FEATURES!

More safety makes for more efficiency with the new Model 101 inspection car. With its simple friction drive transmission—four speeds forward, three reverse—it's a pleasure to operate. Low center of gravity helps it hug the rails. Full-vision cab* means more comfort, too. Rear lifting weight is only 98 pounds. All in all, the 101 is a 4-man car that should be investigated by every railroad. See your Fairbanks-Morse representative or write Fairbanks, Morse & Co., Chicago 5, Ill.

*Also available without cab.

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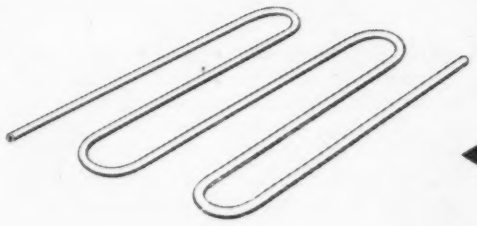
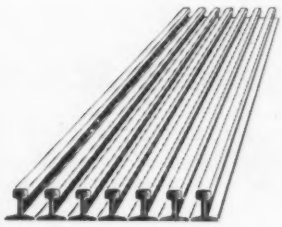
"RIBBONRAIL"

Saves these Critical Railroad Needs...



COPPER

Signal bonds of average size weigh 2½ ounces. In a mile of RIBBONRAIL track you save 30 pounds of scarce, costly copper – enough copper to make 147 ft. of ½ in. standard copper tubing. When you use continuous rail you also save copper in the future because there are no bond renewals in RIBBONRAIL.



STEEL

With every mile of track laid with RIBBONRAIL you make a net saving of from 12 to 16 tons of steel – enough steel to lay more than 300 ft. of track with RIBBONRAIL. And in the future you save more steel because with RIBBONRAIL no standard lengths are removed because of battered rail ends. Put essential steel to use in rail – not in joint fastenings.

MANPOWER

RIBBONRAIL is easily installed with few men. And it eliminates joint bar maintenance – there are no fastenings to tighten and replace, no joint lubricant to apply, and no battered rail ends to build up. All these major manpower users are eliminated. Use your valuable manpower for other operations.

As a chief engineer or other railroad executive you cannot ignore savings that come with RIBBONRAIL.

The term "Ribbonrail" is a service-mark of Union Carbide and Carbon Corporation.

OXWELD RAILROAD SERVICE COMPANY
A Division of Union Carbide and Carbon Corporation
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Carbide and Carbon Building Chicago and New York
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Canadian Railroad Service Company, Limited, Toronto

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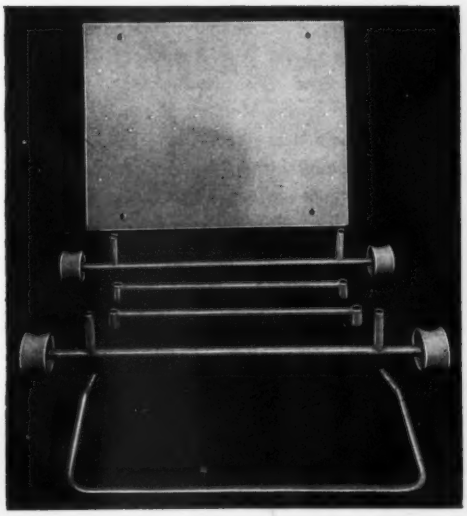
Conserve the Energy of Your Mobile Track Gangs with this WOOLERY Track Tool Transporter!

This handy, light-weight push car carries tools to the job site from the nearest crossing or other point where truck or bus must stop. *Men arrive fresh and ready for work having been spared the laborious job of toting hundreds of pounds of tools and equipment – saves time – and muscles – for the important job!*

Rolls easily on anti-friction bearings even when fully loaded.

Handle can be inserted on either side for pushing in either direction.

Weighs only 160 lbs – yet will carry a thousand pounds of tools or materials! This is due to the novel steel-reinforced weather-proof plywood deck construction. *Light – but amazingly strong!*



Can be set up or dismantled in *less than a minute* for easy loading into a truck, bus or motor car.

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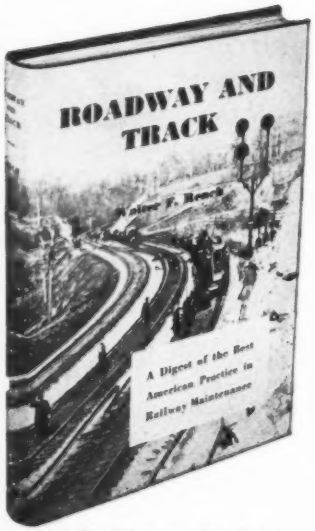
A Handbook of
Modern Track Work

ROADWAY AND TRACK

By Walter F. Rench
Formerly Supervisor on the Pennsylvania Railroad;
Author of Simplified Curve and Switch Work



Third Ed. 350 pages, 101 photographs 19 line drawings, 12 tables, index, 6 x 9, cloth, $5.00.

The third edition features the use of the latest mechanical equipment in connection with roadway and track maintenance. Older methods employed where full mechanical equipment is not available are also explained. While most of the methods described are those which are standard on the **Pennsylvania**, A.R.E.A. recommended practices and those in use on other well maintained roads have also been included.

Outstanding types of mechanical equipment used in track work are described and illustrated with action photographs. Engineering drawings show working details. The economies resulting from the adoption of modern methods are clearly outlined. Useful tables have been added to make the book suitable for reference use, as well as a practical handbook on modern methods.

CONTENTS

Part I–ROADWAY: Essential Elements in Roadway Maintenance–The Right of Way–Drainage of Roadbed and Track–Vegetation for Banks–Economics of Roadway Machines–Labor Saving Methods and Devices in Roadway Work–Small Tools and Their Uses.

Part II–TRACK: Essential Elements in Maintenance of Track–Program for Maintenance of Way and Structures Work–The Track Obstruction–Power Machines and Equipment–Labor Saving Methods in Track Work–Track Materials and Their Uses–Practice in Rail Renewals–Practice in Rail Repair and Inspection–Maintenance of Main Tracks–Maintenance of Yards and Terminals.

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SUPPLEMENT: A 10-page Supplement describing new A.R.E.A. recommendations and changes up to July 1, 1948, can be cut for insertion in proper place.

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TRACK SUPERVISORS

While written primarily to serve the needs of track supervisors and other maintenance officers, it contains material of considerable interest to transportation and mechanical officers who require a working knowledge of the fundamentals of maintenance of way practice. Section and extra-gang foremen, who wish to acquire a broader knowledge of their work will find it particularly helpful.

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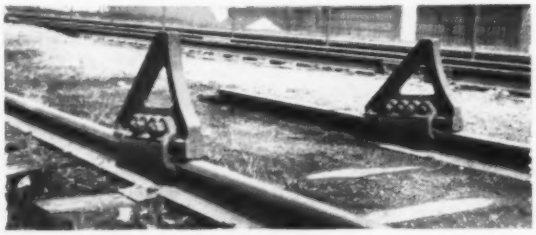

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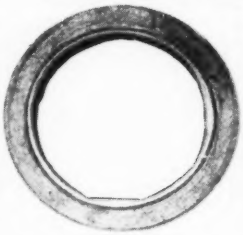

Old line *after* reconditioning by Pipe Linings, Inc.

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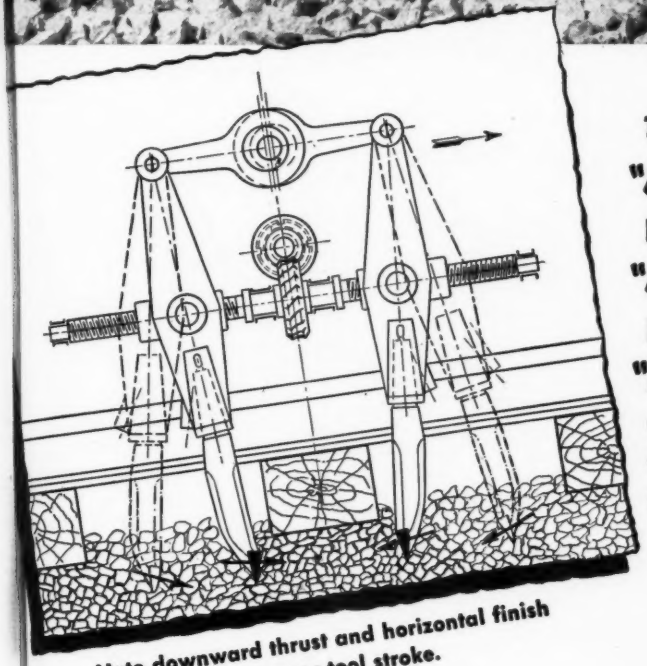

Note downward thrust and horizontal finish of tamper tool stroke.

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"BRUTE FORCE" to ram ballast into place.

"PERSUASION" to urge ballast into place.

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WILL FURTHER ENTRENCH ITS POSITION AS THE FINEST OF BALLAST-PLACING MACHINES!

1 THE BUILT-IN HYDRAULIC INDEXER — FOR SMOOTH, EFFORTLESS MOVEMENT AND POSITIONING OF THE MACHINE FROM TIE TO TIE.

Forward and reverse are instantaneous and braking action of the indexer in either direction is fast, positive and cushioned — with no more effort required from the operator than a flick of the control lever. This feature greatly reduces operator fatigue, considerably steps up progress, and eliminates any necessity of extra hands on stiff curves and grades.

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Two men and the operator is all it takes with this device to remove the Jackson Multiple from the track, and it is easily done in 60 seconds. A turn of the Lift Lever at the control stand raises the machine in a matter of 2 or 3 seconds to permit placing of set-off rails. It is then instantly lowered and almost as quickly pushed into position — a tremendous advantage on hot track.

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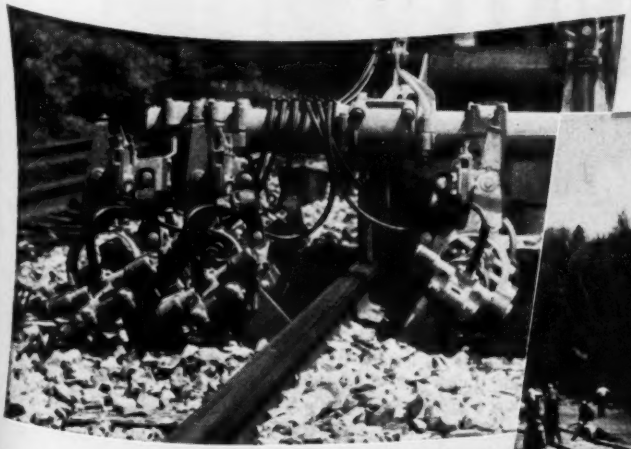

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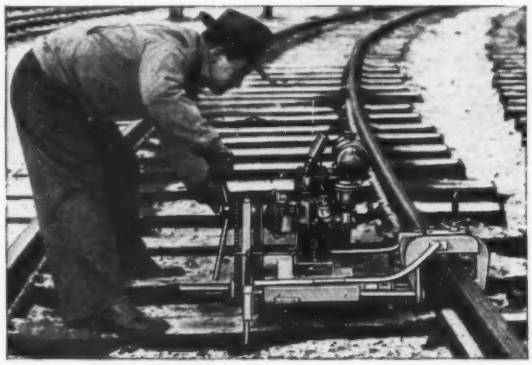

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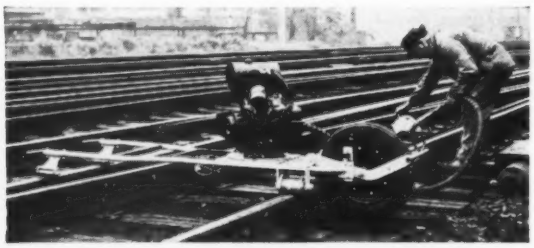

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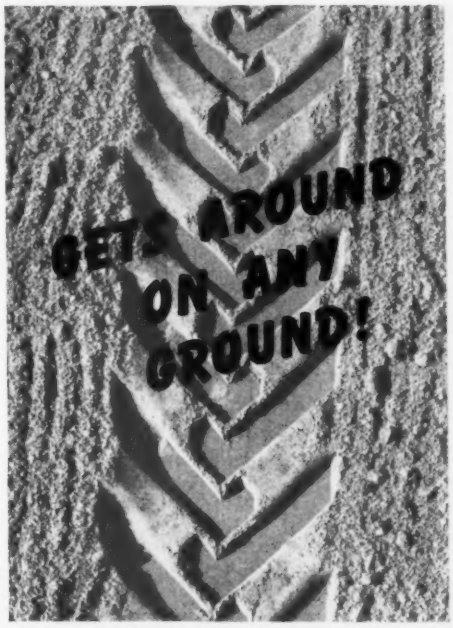

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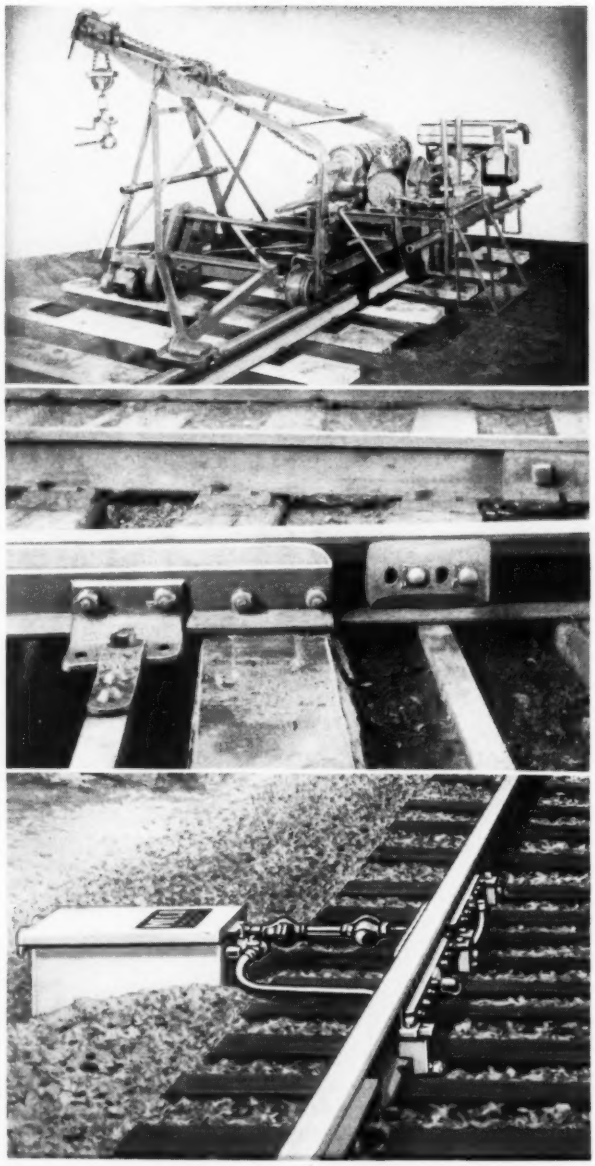

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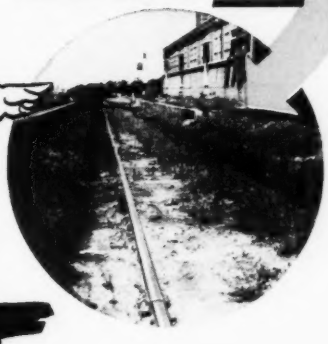

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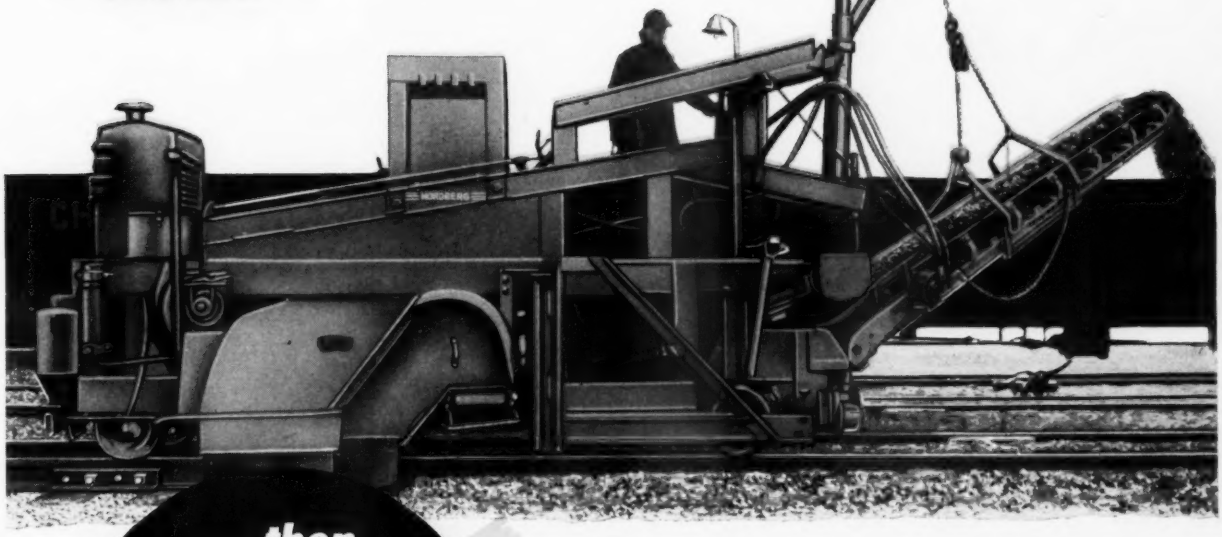

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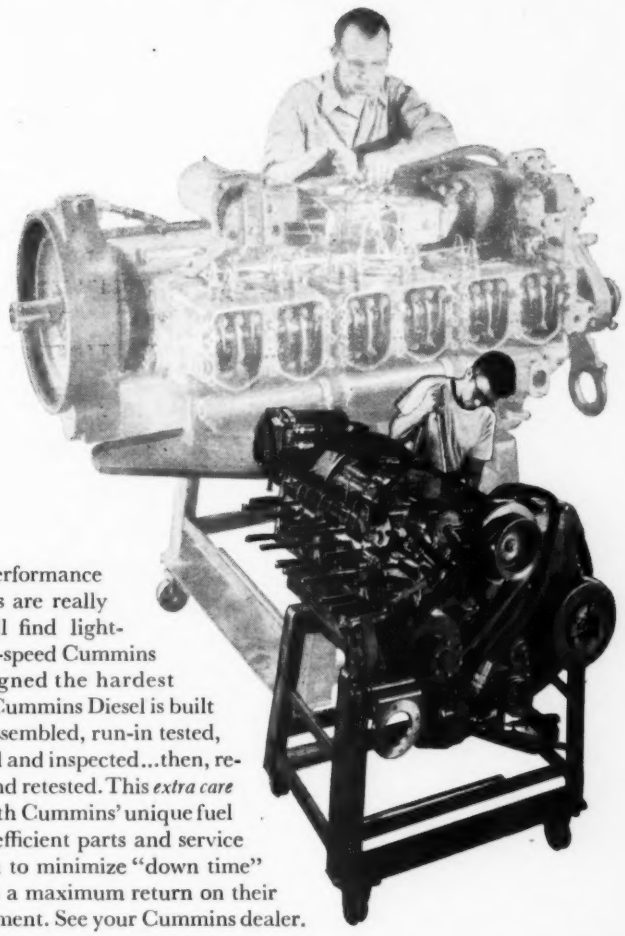

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No. 278 of a series

Railway Engineering and Maintenance

SIMMONS-BOARDMAN PUBLISHING CORPORATION
79 W. MONROE STREET
CHICAGO 3, ILL.

Subject: Hard Work but Satisfying

February 1, 1952

Dear Readers:

As you read this magazine from month to month I wonder to what extent you have noticed or have been impressed by the fact that a great preponderance of the material in each issue deals with the new and the different. The fact is that we spend most of our time in searching out the newer developments and in bringing you the essential facts regarding them. Indeed, this service is the principal justification for our economic existence.

This need on our part for uncovering and familiarizing ourselves with new methods, techniques, materials and equipment is one of the more satisfying compensations of being an editor. For this and other reasons life is never dull in an editorial office. By the same token it is seldom, if ever, easy. Almost every article we write, because it does deal with some new development, presents entirely different problems than any other article. This is partly due to the fact that we must ourselves have a thorough understanding of the subject matter before we can write about it in a clear and concise manner. This not only requires that we "dig" for the facts, but frequently entails considerable research, especially if we are dealing with a highly technical subject.

The article in this issue describing the waste-treating plant at the Pennsylvania's Enola yard presents an example of where our editor was confronted with a highly-technical subject that was largely "Greek" to him. This meant that he had to become an expert on the subject in a hurry before he considered himself capable of writing the article. The easy way, of course, would have been to obtain the bare facts and then to set them down in parrot-like fashion, but when articles are written in this manner they lack the ring of authenticity that is so necessary if the reader is to have confidence in the material presented.

The example cited above is an extreme case. Actually most of the articles appearing in this magazine deal with subjects that are new to our editors only in the sense that they involve variations in procedures or practices with which we are already thoroughly familiar. This familiarity comes from the requirement that editors for Maintenance have a background of practical experience in engineering and maintenance problems. In this way our many difficult assignments are made as easy as possible for ourselves, while at the same time you are given assurance that the material appearing in these pages will be written by men who know your problems and who speak and write your language.

Yours sincerely,

Merwin H. Dick

Editor

MHD:ag

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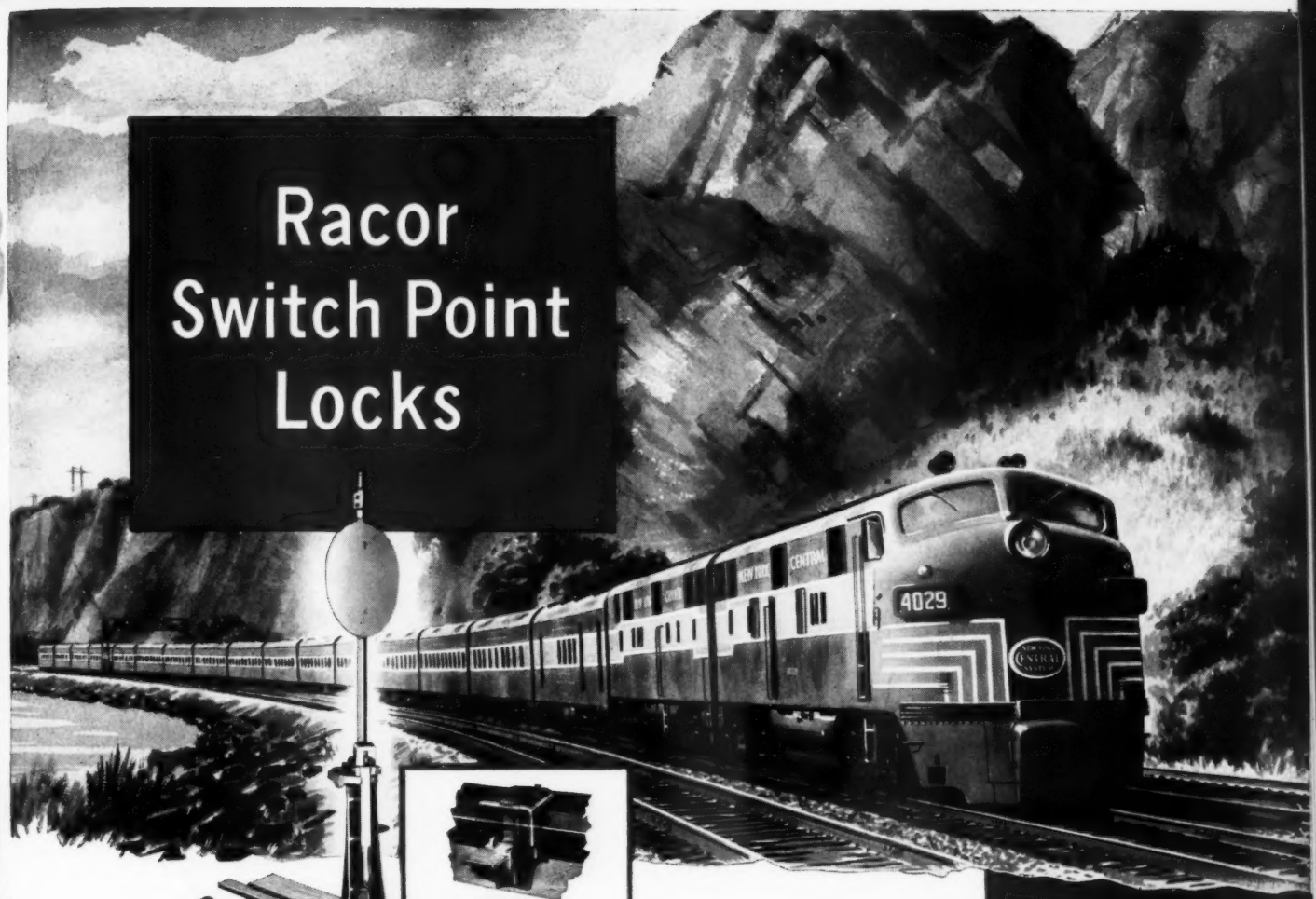

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Railroad Gains —

A Source of Inspiration to Employees

There are many persons who express themselves as being firmly convinced that the railroads are a backward industry and that they are destined, sooner or later, to wind up on the rubbish heap of outmoded forms of transportation, along with the mule train and the pony express. Railroad employees, including maintenance men, have heard this view expressed so frequently that it would not be surprising if some of them were beginning to lose confidence in their industry. What are the facts?

One of the best criteria of the inherent soundness of the railroad industry is the resilience it has displayed in the face of insidious influences that long since would have caused the submergence of a weaker enterprise. For many years the railroads have been subjected to a form of governmental regulation that has placed them at a serious disadvantage relative to competing forms of transportation. While they were thus restrained, their competitors were nourished on substantial subsidies which made it possible for them to thrive and to obtain an increasing proportion of the available business. Finally, while the railroads were fighting for their very existence against artificially imposed odds, the railroad brotherhoods, heedless of the damage they were inflicting on the industry that supports them, were proceeding, with political connivance, to browbeat the railroads into giving them repeated wage increases and other concessions.

One might suppose that the railroads would be reeling under these repeated blows. Unquestionably they have suffered serious ill effects, but these only seemed to have spurred them on to greater efforts to overcome their difficulties. Consider, for example, the performance of the railroads in 1951. According to a year-end statement by William T. Faricy, president, Association of American Railroads, the nation's railroads in that year carried a near record traffic load of 643 billion ton-miles, and took in record gross operating revenues of more than $10 billion. However, because expenses and taxes increased faster than revenues, net railway operating income fell from $973 million in 1950 to $903 million in 1951.

Despite the meager return on invested capital, said Mr. Faricy, the Class I roads spent in 1951 an all-time record amount of more than $1,400 million to enlarge capacity and to increase operating efficiency. Approximately $1,061 million of this total was allocated for the purchase of about 84,000 new freight cars and about 3,500 new locomotive units. More than $351 million went for improvements to the fixed plant. Because of these improvements, which represent a continuation and acceleration of a long-range program, the railroads during the past year so enlarged their carrying capacity and increased their efficiency, according to Mr. Faricy, that the average freight train carried more tons of freight more miles during each hour of operation than ever before.

It would be shortsighted indeed to take the position that this record implies a rosy, untroubled future for the railroads. Government spending for defense was certainly a factor in keeping traffic at a high level last year. Also, none of the insidious influences bearing on the railroad situation has been removed, or even modified or tempered in any way. But the realization that the railroads as a whole are exhibiting such great energy and resourcefulness in dealing with their problems is a good omen, and should be a source of inspiration to every railroad employee.

CORRESPONDENCE —

There's Too Much of It

YOU CAN walk into almost any roadmaster's office today and, even with the roadmaster out, find more than one railroad employee working there. One will certainly be the roadmaster's clerk and the other or others will be assisting the clerk. The others may not be carried on the payroll as clerks or stenographers and they may not work in the office for the full month, but they are necessary in helping the roadmaster to prepare his reports and correspondence.

Without doubt there is more correspondence written and reports made today than there were even a few years ago. The cost in terms of man-hours and dollars must be appalling, not to mention the fact that the handling of correspondence and the preparation of reports requires that supervisors spend time in the office when they should be out in the field directing productive work.

What has caused this large increase in correspondence and the number of reports as compared, for instance, with just one decade ago? The question naturally arises, is more work being done now? Well, statistics do show that expenditures for maintenance of way and structures are about twice as high now as they were 10 years ago. But this fact alone does not indicate that more work is being done because a dollar today will only purchase 52.5 per cent of what it did 10 years ago. Also, statistics show that there are about the same number of employees on the payroll (about 5.5 per cent less to be exact) now as were employed 10 years ago; that the amount of rail laid annually is about the same; and that the annual tie renewals are substantially less than they were.

Undoubtedly, a large part of the correspondence and reports required today stems from the need for keeping top management informed on every large project. With railroad profit margins as narrow as they are, management is keenly interested in the progress and cost of all work involving large expenditures. Maintenance officers, too, unable to visit work locations as often as they would like to, want reports on the progress of all maintenance gangs. Also, keeping projects constantly supplied with the necessary materials today requires closer supervision and more correspondence than it did 10 years ago.

Thus, some roadmasters and chief carpenters find themselves struggling in a seemingly endless morass of correspondence and reports, which prevents them from giving adequate attention to other current work. Perhaps a way to some relief would be to question, every five years or so, the need for some or all reports, the purpose being to find out who uses them, and to challenge whether the cost and time spent in preparing them is justified by the benefits. At least the number of copies can perhaps be reduced. It is even possible that the man who originally requested a particular report is now retired or dead and that his successor barely glances at it, if indeed he uses it at all. If the roadmasters, chief carpenters and division engineers are ever to be freed of their paper work to give them more time for the exercise of their supervisory talents, and if their staffs are to be given relief from the vast amount of correspondence now handled, the number of reports required must be drastically reduced.

MAINTENANCE PRACTICES—

Their Continuing Improvement Seems Assured

FEW things augur as well for the future well-being of American railroads as the present attitude of most managements toward their younger employees—the embryonic superintendents, chief engineers and presidents of tomorrow's railways. This attitude is expressed in different ways, not the least of which is the insistence that all supervisory personnel, especially those in the junior ranks, keep abreast of the improvements in maintenance practices, in roadway machines and in other aspects of the rapidly changing art of railroading in general.

It is significant that the use of two effective means of accomplishing this educational broadening are becoming more and more evident. One of these is the increase in membership and activity of young men as junior members of the American Railway Engineering Association. The other is the expanding readership of trade journals such as Railway Age and Railway Engineering and Maintenance.

In becoming junior members of the A.R.E.A. young engineers are presented with unexcelled opportunities to keep abreast of "the times," if not ahead of them. These men are privileged to attend committee meetings and benefit from the frank discussions that take place there. In that way they learn the background, and the why's and the wherefore's of final reports and manual material. As a chairman of the A.R.E.A. Board Committee on Membership pointed out in a recent appeal for members, "In committee activities, the young engineer not only engages in cooperative work, but he learns to modify his ideas and practices by mixing and exchanging ideas with other members of his profession. He learns methods of compromise without sacrificing principle or quality of performance."

It is heartening that railway managements and officers of the A.R.E.A. do not offer these advantages to young engineers passively, but instead actively encourage men to accept them. Furthermore, they do not give "lip service" to such encouragement by allowing men to join the association and then prohibit their attendance at committee meetings and conventions.

Evidence of the truth of the above statements will be self apparent at the forthcoming A.R.E.A. convention in March, which is expected to be attended by more junior members than ever before. In fact, the growing needs of these men have dictated that a precedent be set at the annual luncheon. There, for the first time, tables will be reserved for junior members only, "in the interest of giving these men an opportunity to get together and become better acquainted." What a good omen it will be for the continuing improvement of maintenance practices on your road, if it is well represented at those tables.

Track Maintenance— Its Effect on Signal Operation

By H. T. Fleisher
Signal Engineer
Chicago & North Western
Chicago

How inadequate track maintenance can interfere with the proper functioning of signals is told in this article which is adapted from an address, entitled "Mutual Problems of the Track and Signal Departments," that was presented by Mr. Fleisher before a recent meeting of the Maintenance of Way Club of Chicago.

• The finest signal system in the world will not function successfully if its track circuits do not operate properly. Track-circuit operation is dependent largely on track maintenance. Dirty track, track in which mud or cinders are in contact with or cover the base of the rail, or track with poor drainage, makes it very difficult to provide proper track-circuit operation. The currents used in track circuits are generally low to insure protection against broken rails to reduce leakage and to provide economical operation.

Each patch of mud or cinders touching the rail acts as a resistor connected between the two rails and drains off a little of the current trying to reach the relay, and, if enough current is drained off, the relay will not operate. This condition is worst at the beginning of a rain storm when all of the carbon in the cinders and impurities in the mud are moistened and reach their lowest resistance, allowing the maximum amount of current to flow.

Split ties are another source of leakage in track circuits, for the cracks become filled with cinders and other impurities that form paths for leakage from one rail to the other through the track fastenings.

Loose rail joints and battered rail ends cause track-circuit failures, due to broken track connections and bond wires. Rail connections and bonds are made of stranded conductors of galvanized steel, copper-covered steel or copper wires. Breakage usually occurs at the plug connection to the rail, due to the crystallizing of the metal from vibration. This type of failure is more prevalent in the long galvanized bond than in other types and can only be corrected by keeping bolts in joints tight, surface at joints uniform and by building up battered rail ends.

The track and signal departments are perhaps more closely associated in the maintenance of track switches than in any other part of the railway system. Switches in signaled territory, be they hand operated or operated from an interlocking machine, either manually or by electric or air power, are a most important joint responsibility of these two departments.

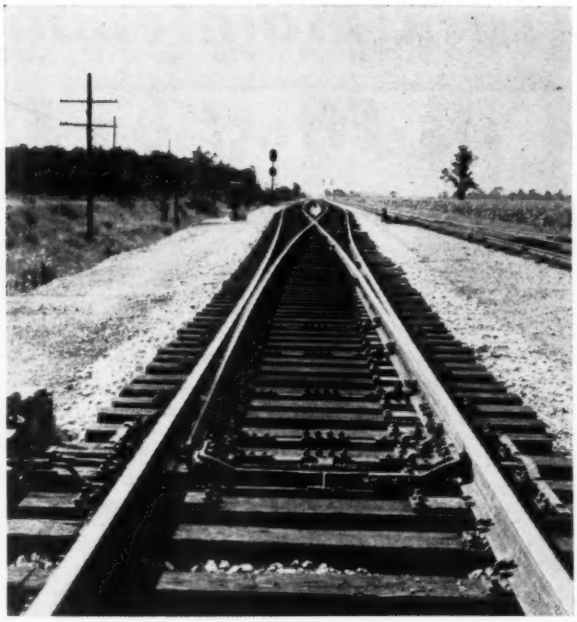
The Rules, Standards & Instructions of the Illinois Commerce Commission require that interlocked switches must indicate danger when their points are prevented by an obstruction from closing to within ⅜ in. or more, and that hand-operated switches must indicate danger when a facing point switch is held open by an obstruction ¼ in. or more or a trailing switch point is held open by an obstruction ⅜ in. or more. These requirements mean that all parts of the switch must be kept tight and in close adjustment.

The fact that the division of responsibility in connection with switch maintenance varies considerably on different railroads is of little moment. The important thing is that the responsibility for switch maintenance is definitely fixed and clearly defined.

Worn parts, such as rods, braces and switch-operating mechanisms, make switch operation erratic and unreliable. It is impossible to hold switches in the proper adjustment when loose rail braces permit stock-rail movement, or when the switch-throwing mechanism moves on the ties or is so badly worn as to have

. . . One of the best lessons I ever learned in track-circuit maintenance occurred when I was investigating a track section on which we had repeated failures each time that it rained. The track section was fairly clean but it would not work reliably, especially at the beginning of a warm spring rain. In checking the section for excessive bond resistance or any other condition that might be causing the failure, I happened to drop my meter lead clip onto a tie and it fell in a crack partly filled with cinders. I found that I had a reading of current flow on my meter, and, checking a little farther, I found that I could get a reading from either rail to any place in the crack that I happened to put my meter clip. This showed that, while the track was fairly clean as far as mud and cinders was concerned, we were having trouble due to leakage through split ties. Replacement of the worst ties corrected the trouble in that section. . . .

Mud or cinders, when in contact with the rails, tend to drain off current from the track circuit—often to the extent that relays will not operate due to a lack of energizing current



Good switch maintenance is a prime requisite for efficient signal operation, for only a well-maintained switch can provide the positive action required to operate signal equipment properly

difficulty in facing the points up properly.

The secret of good switch maintenance is to start with a properly designed switch, installed in accordance with the design, with all the proper parts and all of them in their proper place, and then keep the switch in the condition in which it was installed.

A new switch placed in track should be so constructed that the points can be faced up to either stock rail with a bar and will remain there. The use of heel blocks, with proper bars and thimbles, is necessary to a free-working switch. If they become broken they should be replaced.

The fit of a point is important. The usual place for making the switch obstruction test is 6 in. back from the point, which is just over or slightly ahead of the operating rod. If a switch point strikes too hard at the point it may stand away from the stock rail farther back on the planing, causing a slap each time a train moves over the switch with excessive wear on the switch point and connections. A switch point that hits too far back on the planing and does not lay up properly at the point, causes an undue amount of strain to be placed on the switch operating mechanism or rods in forcing the point into proper position.

The most important considerations in switch maintenance are to keep the switch in the correct surface and alinement. Poor surface and alinement cause excessive strain and wear on switch parts and connections that will eventually lead to failures. Proper drainage at switches and good ties are essential. It is impossible to keep the parts of a switch tight and in proper operating relation to one another if the foundation, which in this case consists of the ties, is insecure.

To prevent the rails from moving, rail anchors should be used on the approaches to all switches, and at other locations where heavy braking may occur. It is expensive to move switch timber so as to realine the switch parts, and many switch failures have been caused by switch rods rubbing against the ties.

Switch operating mechanisms and the connections to them, both mechanical and electrical, should be installed and maintained so as to create the least possible interference with proper operation and maintenance of the switch.

I have indicated before that the tolerance permitted in switch adjustment is small, but it is essential that full benefit be taken of all the tolerance permitted by the rules in effect on a particular road. There is no excuse for a switch to be adjusted so tightly that a failure occurs with the least bit of sand or other foreign material in the points, but it is only possible to take advantage of the full tolerance allowed when the switch is in good condition and the points face up properly.

Protection at Crossings

Another field of joint responsibility between the track and signal departments that is becoming even more important is that of highway crossing protection. In my opinion the toughest job on the railroad is that of the crossing watchman, and it behooves all of us to give him every consideration and all the assistance possible so that he may perform his job well. Crossing watchmen need annunciators so that they will know a train is approaching in sufficient time to permit them to perform their duties properly. Also they should be provided with modern equipment wherever possible.

Manual gates are usually maintained by the signal department and operated by the track department. Gate-operating mechanisms must be kept in good condition so that they respond promptly to the operation of the control devices and give adequate warning. The installation of electric lights on manual gate arms in place of oil lights is one of the most profitable investments a railroad can make. The cost of operation is very little, if any, more, and the savings in gate-arm

Efficient highway protection is a goal which can be attained only through the consistent cooperation of track and signal forces. Aside from keeping the track in good condition to assure proper signal operation, track men should be ever observant of conditions at highway crossings and report all failures of crossing protection equipment that they may observe

maintenance and accident cost will be gratifying.

With the installation of automatic crossing protection the duties become slightly different but the responsibility and principles remain the same. The purpose of any protection of a highway grade crossing is to provide adequate warning when a train is approaching that intends to move over the crossing, and not to stop or delay highway traffic when there is no danger to its movement over the tracks.

In my discussion of track-circuit maintenance, I gave the impression that the failure of a track circuit is a safe failure in that it indicates the presence of a train on the track when there might not be one there. In other words such failure causes the wayside signals to assume a restrictive indication, thereby resulting in train delay without accident.

Results of Circuit Failure

A track-circuit failure with automatic highway crossing protection, on the other hand, may set up an unsafe condition by causing the signals not to operate on the approach of a train or, more frequently, cause them to operate continuously, resulting in traffic disregarding and disliking the automatic signal protection.

We generally take care of the signal failure in our design, but false operation due to track-circuit failure or from other causes must be handled locally, and this is where track-department forces are invaluable. Track forces pass by protected crossings more frequently than the signal maintainer, and they should be alert to detect any improper operation, reporting it promptly to the proper authority and taking whatever other action may be necessary to safeguard the highway traffic, such as arranging for train orders or providing manual protection until the condition can be corrected.

Some roads provide test switches on the sides of instrument cases at the crossings where track men and other employees in the vicinity may check the operation of the protection, noting on a card record the date, time, whether the test was satisfactory, and their name. Such records are invaluable in damage suits resulting from an accident at a protected crossing.

As I said before, the purpose of any grade crossing protection is to give warning of the approach of a train intending to pass over the crossing. When on-track work equipment, such as work trains, power ballasters, cranes, etc., is on the track, when rail is being relayed, or any other work is being performed within the control limits of automatic crossing protection, an employee should be stationed at the crossing, or other means taken for protecting traffic on the highway.

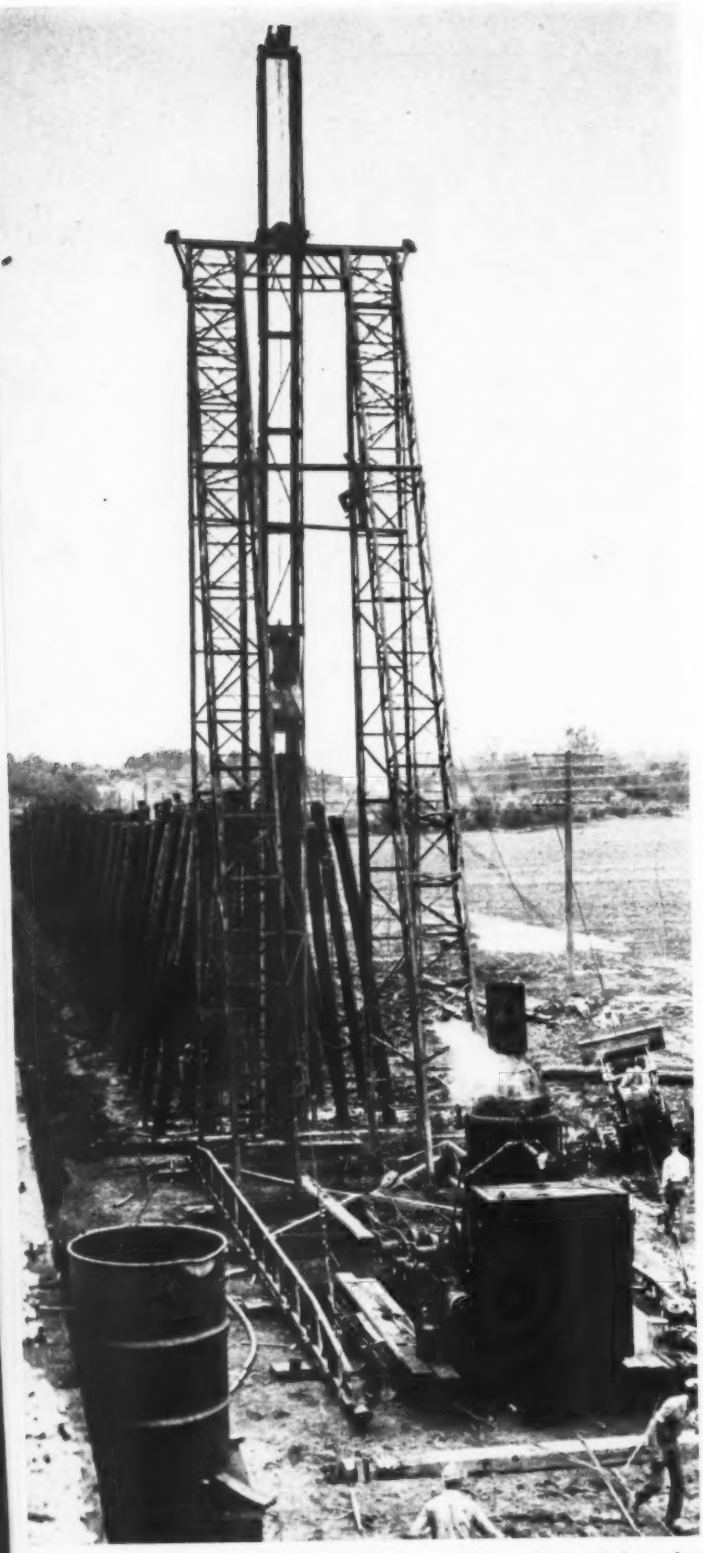
Another phase of automatic highway crossing protection that is increasing in importance occurs at complicated layouts at crossings carrying large volumes of traffic, where there is switching movement, station or service stops, or other features that require manual supervision of the automatic controls to insure adequate but not excessive and unnecessary operation of the protection facilities. It is important that the employees assigned to these positions be capable and well qualified. It is necessary that they have a thorough understanding of the automatic controls so that they may be in a position to supplement them and provide the best possible protection.

The first rule in everybody's book is: "Safety is of the first importance in the discharge of duty." Another one I remember reads: "In case of danger to the company's property all employes must unite to protect it."

With a clear understanding of responsibilities, and of the need for cooperation between departments, I am satisfied that the mutual problems of the track and signal departments, in fact those of all departments, can be solved, and the railroad industry will advance and prosper by furnishing service that cannot be duplicated by any other transportation facility.

Bridge Job Features *High-Speed* Pile Driving

Driving an average of 30 long piles a day is the remarkable performance achieved by the Illinois Central in carrying out a project, now nearing completion, involving the replacement of a ballasted-deck pile trestle, 3392 ft. long located about five miles south of the road's Ohio River crossing at Cairo, Ill.



With this off-track pile-driver, which pulls itself from bent to bent by means of a winch, the Illinois Central has established unusually high production rates in driving piles for a new ballasted-deck pile trestle across an overflow channel of the Ohio river near Wickliffe, Ky. Traffic will continue to be carried on the old bridge at the left until construction of the new one has reached completion

• Extraordinary progress being achieved in driving piles characterizes a bridge project on the Illinois Central near Wickliffe, Ky., involving the replacement of a long ballasted-deck timber-pile trestle across an overflow channel of the Ohio river. Using a special off-track pile driver, the road has driven an average of 30 piles a day, and on individual days as many as 45 piles. The piles are 60 and 65 ft. long with a penetration of about 35 ft.

On New Location

The excellent progress was made possible in part because the new bridge is being constructed on an offset alinement approximately parallel with the old, and therefore no interruptions due to the passage of trains were encountered. All trains will be carried on the old bridge until the new one is completed at which time the track at each end will be shifted to the new alinement. The levelness of the ground beneath the bridge was a contributing factor for effective use of the special off-track pile driver.

The bridge involved in this project, known as No. 368-9, is located about five miles south of the Illinois Central's Ohio River bridge at Cairo, Ill., on the road's main line between Chicago and New Orleans, La. The structure is also used by trains of the Gulf, Mobile & Ohio. The old bridge, which is 3353 ft. long, had been raised in the past by installing additional caps and piles, and was generally approaching a condition which made replacement necessary. Decay having taken its toll, the piling particularly was nearing the end of its service life.

Details of New Bridge

The new bridge, which will be 3392 ft. long and will cost about $600,000, is being constructed alongside the old structure at a distance from it of 29 ft. at one end and 20 ft. at the other. The grade of the new bridge

will be level and at an elevation 4 ft. higher than the grade of the old structure. Part of the bridge (320 ft.) will be on a 30-min. curve, the remainder being on tangent.

When completed the new bridge will consist of 248 timber ballasted-deck pile-trestle spans, each 13 ft. long; 6 concrete-slab spans, each 20 ft. long, and one I-beam span 47 ft. long, on concrete piers. All timber in the bridge, including the piles, is creosote treated. Each pile bent contains six piles.

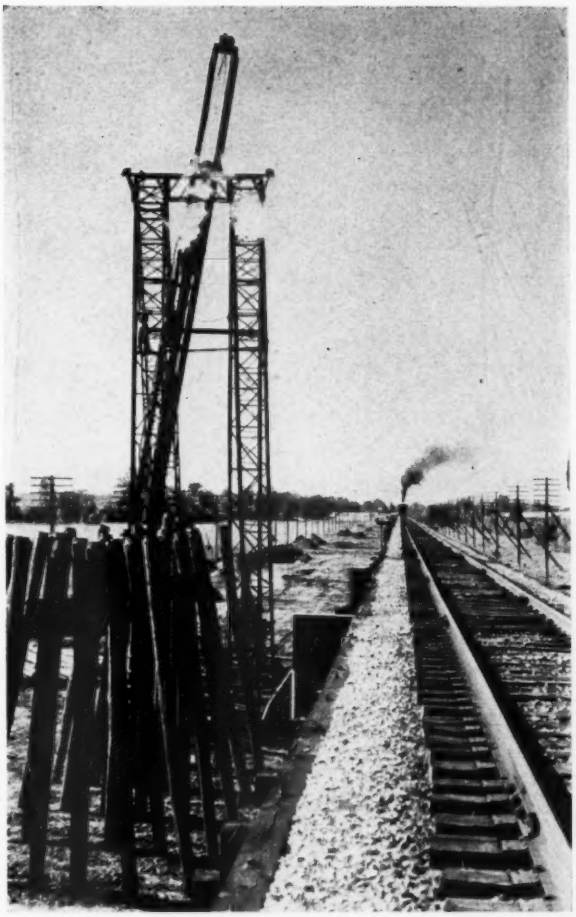
The concrete slab spans are spaced about 475 ft. apart and serve as fire breaks. The slabs are being precast at Wickliffe and will be placed on the piers after the timber deck is completed. The I-beam span with a concrete slab deck will be placed across a stream known as Willow Creek.

Features of Piledriver

The pile driver used on this project consists of a truss-sided steel frame, on which is mounted a structural steel tower, about 60 ft. high, at one end, and an oil-fired boiler at the other. The pile-driver leads are suspended from the axle of a roller which runs in a channel-shaped track across the top of the tower. Thus, the leads can be moved laterally to any position desired and can also be swung at an angle for the driving of batter piles.

When in operation the pile-driver is supported on 7-in. by 16-in. bridge timbers which serve as skids when the rig is moved from one bent to another. Power for moving the outfit is supplied by a winch, the winch cable being anchored to a dead man some distance away. This machine is being used to drive the piles for all except 24 bents. These 24 bents are those located at the ends of the bridge where the ground slopes up to the bulkheads. The piles in these bents are being driven by an on-track pile driver.

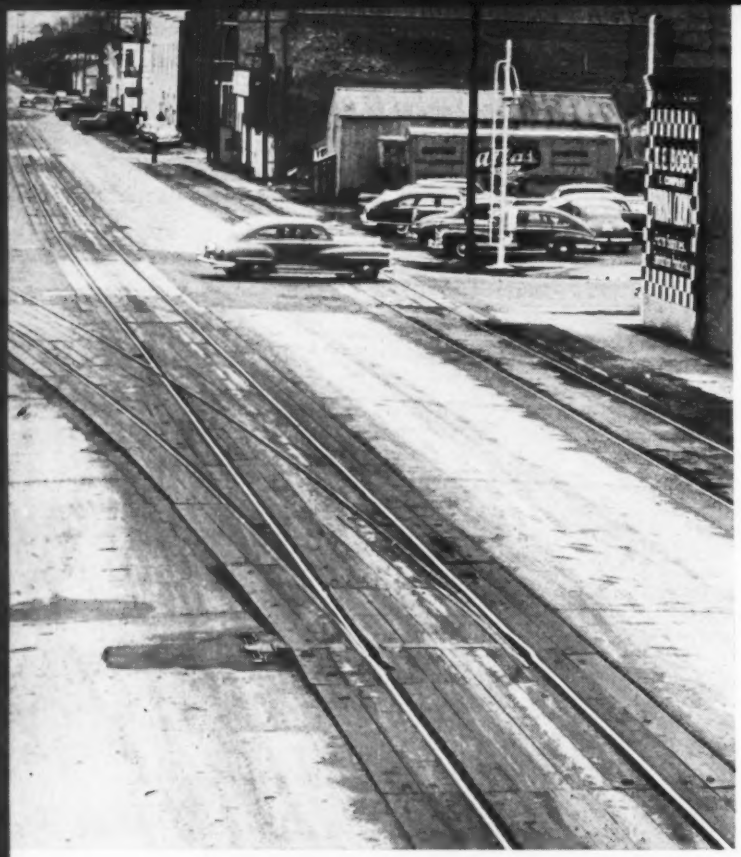
All the work described above is being carried out by company forces under the general direction of C. H. Mottier, vice-president and chief engineer, M. Block, engineer of bridges, and N. W. Kopp, division engineer of the Mississippi division.



The pile-driver leads are suspended from the axle of a roller which can be moved to whatever position is required along a channel-shaped track at the top of the tower. The leads can also be swung at an angle as shown here for driving batter piles

Completed piers for one of the concrete slab spans. These spans are spaced about 475 ft. apart and will serve as fire breaks

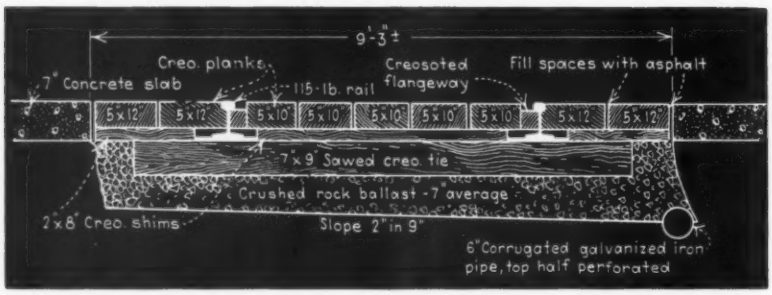
Shown under construction here are the concrete piers which will furnish support for a 47-ft. I-beam span over Willow Creek



Installs Long Rails, Drainage System To Minimize Upkeep Of Track in Street

Maintaining a smooth surface for vehicular traffic, as well as proper line, surface and gage for rail traffic on a main track laid along a busy city street, is so difficult that drastic measures are sometimes justified. How the St. Louis Southwestern remedied such a condition is told in this article.

The Cotton Belt's main track in Third street, Pine Bluff, Ark., after rehabilitation. Before, it was difficult to maintain and appeared much like the siding shown at the right. A typical cross section of the improved track structure is shown below.



• As in all situations where a main track occupies a busy city street, the St. Louis Southwestern (Cotton Belt) was working under handicaps in maintaining a section of its main track in Pine Bluff, Ark., which extends along the center of Third Avenue for several blocks. The street was paved on both sides of the track area with either concrete or asphalt, and the track portion was surfaced with asphalt, with planks placed on both sides of the rails. Surface water was seeping down through the flangeways and cracks in the paving, fouling the gravel ballast, causing churning at the joints and resulting in difficulty in holding proper line, surface and gage. In addition, the trackage was a source of complaints from the city because of the rough condition of the street. Faced with excessive maintenance costs, the Cotton Belt decided that the conditions could be remedied only by the rebuilding of the track structure with heavier material, together with the installation of an adequate sub-surface drainage system.

For the track structure, plans called for the relaying of 2,213 track-feet of worn 85-lb. rail with new 115-lb. rail, the complete renewal of all crossties, and the replacement of the fouled gravel ballast with crushed stone. The plans further called for the elimination of all rail joints by butt-welding the rail, except where insulated joints were required for the operation of flasher signals at six cross streets and those required in connection with the installation of four turnouts.

When the drainage material had been assembled, traffic was detoured and a truck-mounted air compressor with paving breaker tools was employed to remove the asphalt pavement within the track area. The track was taken up and the recovered 85-lb. rail and fastenings were held for subsequent temporary use, while the usable ties were salvaged for use in side tracks. The paving breakers were then used to loosen the old ballast, after which a dragline was employed to remove it down to the subgrade, which was about 22 in. below the top of rail. The subgrade was sloped 2 in. in 9 ft. to the side on which a longitudinal drain was to be installed. The excavated material was loaded in trucks and hauled away for disposal.

Drainage System

The longitudinal drain was comprised of more than 2,000 ft. of 6-in. galvanized corrugated metal pipe, having a bituminous coating, and was perforated for half of its periphery. At each cross street the drain was connected to a city storm sewer, and a manhole was constructed at each of these connections and at other strategic locations for cleanout purposes. The pipe was laid with the perforations on top and with the flow line roughly about 2 ft. below the top of pavement.

The new 115-lb. rails were re-

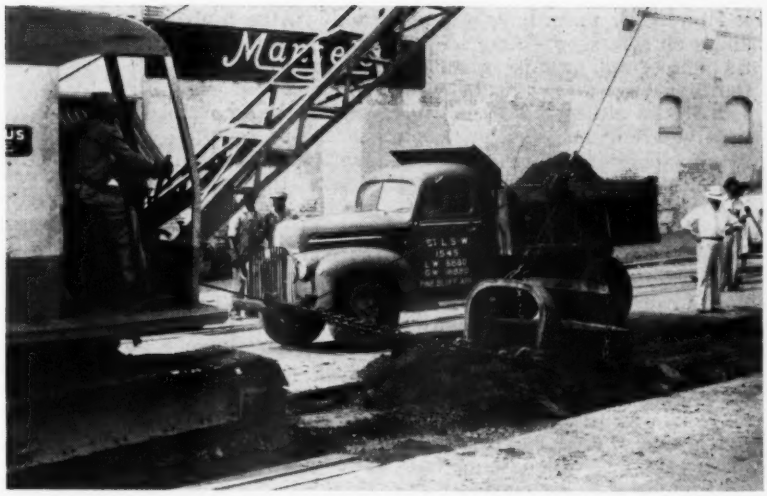
ceived from the mills in standard 39-ft. lengths but with undrilled ends, and were welded together by the Oxweld pressure-welding process. The lengths of the butt-welded rails ranged from 58 ft. 6 in. to 585 ft., as required for fitting between insulated joints and for the turnouts. The strips of welded rail were transported from the welding plant to the site of installation by push cars, but instead of being carried on the tops of these cars, the rails were suspended beneath them by means of metal hangers at the ends of bridge ties placed longitudinally on the push car decks. The push cars were spaced at 39-ft. intervals and were towed to the site by a section motor car.

In the meantime, the new crushed stone ballast had been unloaded on the prepared subgrade, new treated crossties laid, and the 85-lb. old rail relaid to form a temporary track. As each length of welded rail arrived at the site, the old rails were removed, heavy tie plates were applied, and the new rail was then laid. When the new track had been tamped and new rail anchors applied, the track was then ready for the roadway surfacing.

Planks for Street Surfacing

Creosoted planks, 5 in. thick, placed on 2-in. by 8-in. creosoted shims, were used for the roadway surfacing. Two lines of 12-in. planks were placed outside of each rail, with the edge of the timber adjoining the rail roughly shaped to fit the contour of the rail. Creosoted flangeways were used on the gage side of the rails and five lines of 10-in. planks were used to fill the area between the flangeways. An asphalt emulsion was applied along the plank joints to make the surface as watertight as possible. Where the track is intersected by city streets precast concrete slabs were used instead of the creosoted plank, and no insulated joints were allowed to fall within the limits of these slabs.

The entire project was performed under the general direction of W. H. Hudson, Jr., chief engineer, and was supervised by J. F. McCurdy, division engineer. The track work was carried out under the direct supervision of B. E. Wilbur, roadmaster, and R. H. Patterson of the division engineer's staff. The welding work was done by the Cotton Belt's bridge and building welding gang under the supervision of A. O. Griffin, welding foreman.



Among the first steps in the project was removal of main track and use of a crawler crane, equipped with a dragline bucket, to excavate fouled ballast down to subgrade

Subgrade was sloped to side where a bituminous-coated, perforated, corrugated metal drain pipe (arrow) was installed longitudinally to carry away subsurface drainage

New 115-lb. rails were welded together by the oxyacetylene pressure-welding process and the long lengths were transported to site individually by a train of push cars

What the Erie Is

Using a special compound for insertion into spike holes, the railroad has substantially decreased spike-hole enlargement and substantially increased the backout resistance of hold-down spikes. Tests are also under way on this road to evaluate the effectiveness of rehabilitating old spike holes by utilizing a U-shaped grooved tie plug with the compound.

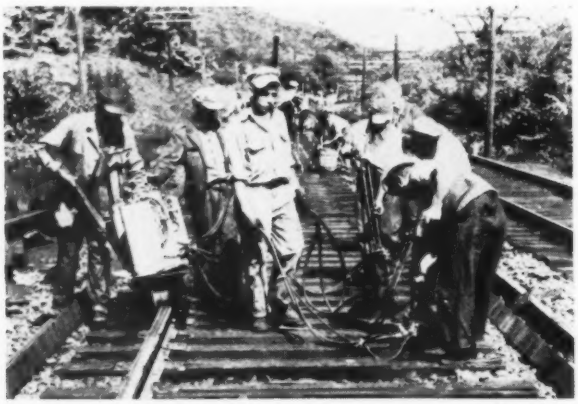
• How many times have you walked down the track and seen spikes projecting an inch or more above the tie plate or rail, or have seen the section forces tapping the high ones down? And how many spikes—not corroded ones either—have you pulled out of their holes with your fingers? Well, this condition isn't found any more on certain sections of track on the Erie where the road has taken special measures to "freeze" the spikes in the ties.

Back in 1947, after the railroads began casting about for ideas for reducing tie splitting and mechanical wear and for obtaining a tie-service life more in keeping with the life of timber as extended by preservative treatments, a large number of measures or products for accomplishing this end were advanced. Among these was the development by the Wood Treating Corporation, Cleveland, Ohio, of a special compound which is designed to increase the holding power of spikes in prebored or previously used spike holes, and a U-shaped tie plug which, when used in conjunction with the compound, is designed to reduce tie splitting and to rehabilitate damaged spike holes.

The compound is made of a resinous material with an activator and is marketed under the trade name Tylife (formerly known as Compound 8). When using the compound it is necessary to have the hole in the tie approximately 1/16 in. smaller than the fastening to be used. The compound is injected into the spike hole, and the fastening member is then driven, causing the compound to be pressurized into the surrounding fibers of the timber. This action, according to the manufacturer, produces the following results:

1. Creates a bond between the fastening member and the tie so that the resistance to pull or backout of the fastening device is greatly increased.
2. Forms a hard column or bushing of wood around the spike or fastening member, which minimizes compression of the wood fibers. Thus, it is said, resistance to side and horizontal thrust of the rail is increased, helping to maintain correct track gage and minimizing movement of the tie plate on the tie.
3. Completely seals the hole and walls around the fastening so that moisture cannot get down into the center of the tie to cause softening and deterioration of the wood fibers and corrosion of the fastening.

While the benefits were shown by laboratory tests, actual field tests on railroads were needed to substantiate the findings. The Erie agreed to install a few test installations of this material in connection with the screw spikes the road uses for hold-down fastenings. Lag screws were chosen for this initial service test because a standard torque wrench could be used for measuring the resistance to backout. Other test installations were later made on several other railroads, which included bridge ties and switch timber.



On a 1951 rail-relaying job near Sloatsburg, N. Y., the Erie found that three applicators for applying Tylife in the line-spike holes could keep up with a 90 to 100-man rail gang

The U-shaped grooved tie plugs were inserted into the spike holes first and the right amount of compound was introduced into the grooves before the line cut spikes were driven

Close-up of applicator shows tanks and nozzle about to apply the compound to spike holes. The pump is on the far side of the tanks while the pressure-control valve is on the near side

Is Doing . . .

• For Longer Tie Life

• For Better Spike Adhesion

The first installation on the Erie was made on October 22, 1947, on a 3-deg. 2-min. main-line curve, about three-quarters of a mile long, in connection with a rail-relay, tie-renewal and ballasting program. New lag screws were used throughout the curve on both the new and old ties. The compound was used with the lag screws on one-half of the curve; on the other half the screws were installed in the usual manner, that is without benefit of the compound.

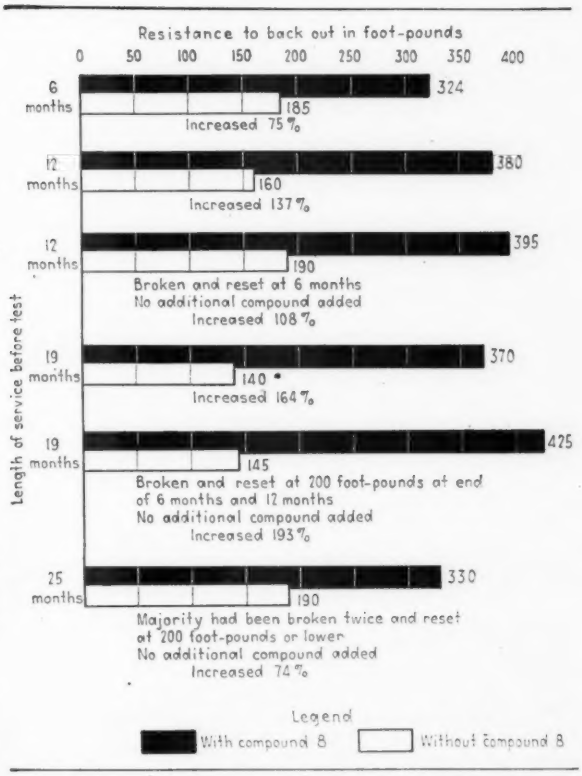
At the time that this installation was made an applicator for injecting the compound had not yet been developed; hence, the compound was poured into the screw-spike holes. Since these holes had been drilled entirely through the ties it was first necessary to plug them at the bottom.

Approximately every six months after installation, measurements were made of the foot-pounds required to break the bonds and back out some of the lag screws, selecting for this purpose some that had been installed with the compound and some that had not. After breaking the lag screws loose in these tests and recording their resistance more compound was applied in some of the holes and the screws re-tightened to a definite pressure. The greater share, however were re-tightened, also to a definite pressure, without the application of additional compound, and then were again broken loose every six months until the end of the test.

Bond More Than Doubled

In cases where the bond had not been broken on lag screws since the original installation until the final test in June, 1951, they required an average of about two and one-half times the number of foot-pounds to break the bonds as was necessary for the lag screws where no compound was used. Where additional compound was used, it was found at the time of the second test that about twice as many foot-pounds were required to break the bonds of these lag screws as compared with those where no compound had been used at all in the initial installation. Also, in most instances where the compound was used originally and the lag screws were broken and re-tightened they showed increased holding power in subsequent tests—greater than the pressure used in re-installing them.

To determine whether or not the compound actually hardens the wood around the spike holes, the Erie had several ties cut through at the lag-screw holes and then sent the pieces to the Koppers Company Laboratory for testing. The results of the tests showed a hardening of the wood of from 15 to 30 per cent around the spike holes for about ⅛ in. into the wood.



This bar graph, which depicts the results of a series of spike adhesion tests carried out on the Erie, shows how resistance to backing-out of screw spikes is increased after application of the special compound prior to spike-driving operations

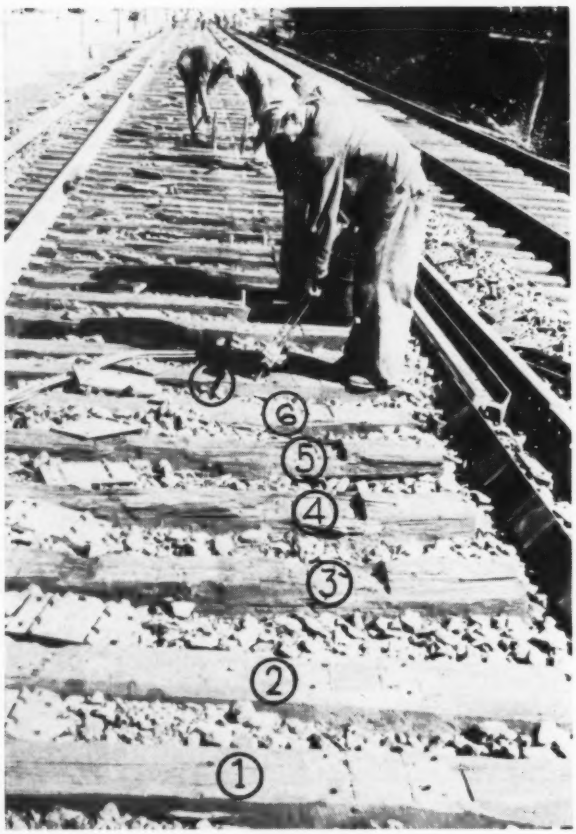
The second Erie test of the compound was begun in November 1949 in connection with the use of Oliver drive spikes for hold-down fastenings. This test was installed on a mile of heavy-duty main track. The drive spikes were installed on one-half of the test track with the compound, and on the other half without the compound. Measurements made a year later are reported to show beneficial results from use of the compound although not as great as with the screw spikes.

The U-Shaped Tie Plugs

In connection with its study of the use of Tylife with track fastenings the Wood Treating Corporation noted that the conventional practice for rehabilitating a spike hole was to insert a solid peg having a cross-section of about 7/16 in. by 11/16 in. and then to drive a ⅝-in. square cut spike. This practice frequently resulted in the splitting of the ties, thereby not only inviting the entrance of moisture with attendant tie decay but also reducing the resistance of the spikes to pull as well as to the thrust action of the rails.

To overcome the objections to solid plugs the company devised a grooved treated hardwood plug with a U-shaped cross-section. The groove extends lengthwise of the plug, thereby providing a reservoir for the compound. After the plug has been inserted into the enlarged spike hole Tylife is injected into the groove. Thus when the spike is driven the compound is pressurized into the peg and the side walls of the spike hole.

Among the benefits claimed from the use of the pegs and compound in conjunction with each other are that they: (a) Create a sealed hole which eliminates condi-



Shown here are two men with the rail-laying gang applying Tylife sealing compound to the hold-down spike holes of ties numbered 1, 2, 6, and 7. Ties numbered 3, 4 and 5 did not receive the compound since these ties were slated for removal when surfacing and ballasting operations are carried out

tions causing tie decay; (b) force line spikes toward the rail, thus assuring original alinement and effective tightness that chemically encircles the spike in a wood column, much harder than the original tie; (c) assure that one side of the spike used in a hold-down position will engage one side of the tie-plate hole, thus eliminating or controlling lateral tie-plate shifting; and (d) provide high resistance to backout, which minimizes tie-plate cutting when used with hold-down fastenings, and lessens maintenance when employed with line spikes.

Installation of Plugs on Erie

The only installation of the U-shaped hardwood plugs on the Erie was made in September 1951 in connection with a rail-laying job at Sloatsburg, N. Y., which was 1.2 mi. in length. On this job the old line-spike holes were rehabilitated with the grooved plugs and Tylife was used with them as well as with Racor drive spikes which were applied as hold-down fastenings.

On this job the bottoms of the holes were plugged after the old line spikes were pulled, since the prebored holes went all the way through the ties. The U-shaped pegs were then inserted into the line-spike holes after which the compound was introduced by a new type of pressure applicator developed by the Wood Treating Corporation. After the new rail was placed, new cut spikes were driven. At the time that the U-shaped plugs were applied, treated round plugs were inserted in the abandoned holes where screw spikes had previously been used as hold-down fastenings. Tylife was inserted into the holes before these round plugs were installed. The track was then re-ballasted.

On October 24, 1951, new holes were bored adjacent to the round plugs that had been applied in September. Tylife was injected into about three-quarters of these holes and Racor studs were applied as hold-down fastenings on the entire job, being driven by means of air spike drivers. The Erie expects to make some pulling tests on these studs in the near future.

Details of Applicator

The device that has been developed for injecting Tylife into spike holes consists of two tanks, a hand pump, three hose lines, and an applicator. One of the tanks has a capacity of 3 gal. and serves as a container for the resinous compound, while the other tank, having a capacity of 1 gal., contains the activator. Since the activator is applied in the ratio of one part to about five or six parts of the compound, the smaller tank holds enough material for two fillings of the larger tank. The 3 gal. of compound, with the proper amount of activator, is sufficient to treat approximately 600 to 700 spike holes before refilling is required. The applicator device is operated by one trackman who fills the spike holes with Tylife. Another trackman refills and pumps the tanks for as many units as are needed for the installation.

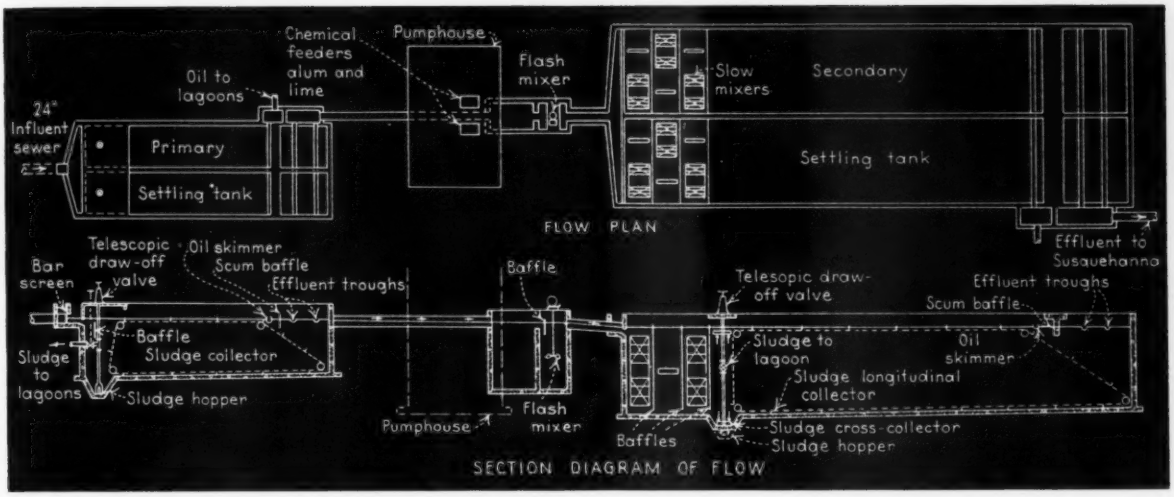
An automatic shut-off valve prevents the pressure in the tanks from getting above 40 p.s.i. The compound and activator are forced through separate hose lines to separate chambers in the applicator, and a third hose maintains air pressure for controlling the applicator pistons, outlet valves, and primer valve. The activator and compound are introduced into the spike holes simultaneously but separately through inner and outer stainless-steel tubes, about three inches long, on the applicator. This is done to prevent premature hardening of the chemicals. The proportions of the compound and the activator are accurately regulated by the applicator. The quantity of Tylife discharged into the spike holes is preset by adjustment of a screw on the applicator, thus assuring no waste of the material.

Where holes are prebored all the way through the ties a quick and inexpensive method of plugging such holes at the depth has been developed. This consists of driving a 1/16 in. oversize ball, called a sealer, into the hole with a simple tool designed for this purpose. This assures the compound being pressurized into the fibers of the tie.

Economics

There are said to be two aspects to the economics of any track application. First, a saving in the immediate future through the use of a product, and second, a net saving over a period of years. It is claimed that the use of Tylife compound and the U-shaped tie plugs give both of these savings. The immediate saving is realized in salvaging a tie which would otherwise have to be replaced. The long term savings are said to be realized in the form of lower maintenance costs in future years, due to extended tie life, better gage holding, and the reduced necessity for tapping down spikes.

The test installations on the Erie were installed under the general direction of B. Blowers, chief engineer maintenance of way.



Flow diagram of industrial waste-treatment plant built by the Pennsylvania at its large Enola (Pa.) freight-classification yard

P. R. R. Builds Modern Plant to Treat Waste From Large Terminal

Increased attention is being devoted on the railroads to the problems of treating liquid waste from terminals before it is discharged into streams. An example of a modern plant designed for this purpose is one that the Pennsylvania has built for treating the effluent from its large engine and freight terminal at Enola, Pa.

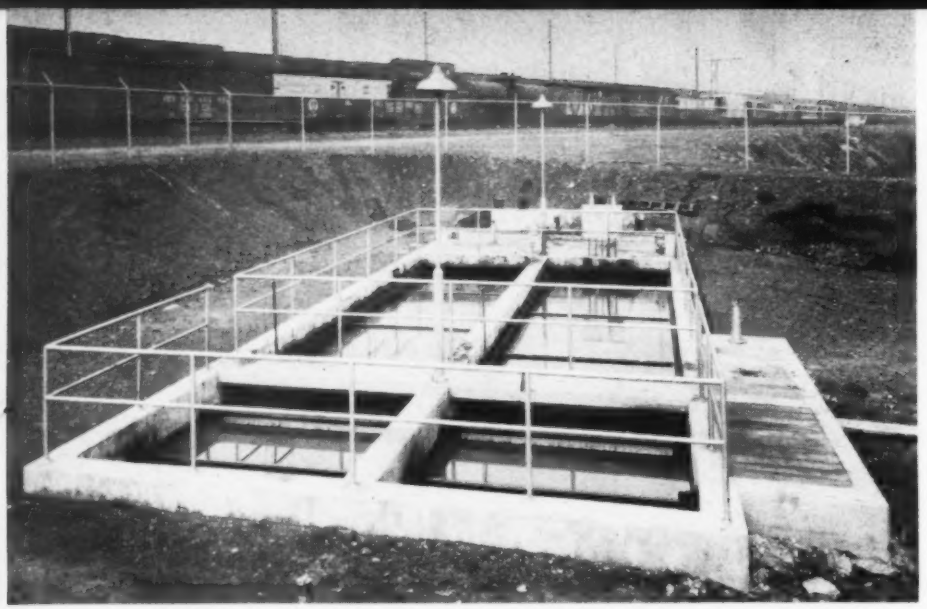
• Cooperating with the clean-stream program of the Commonwealth of Pennsylvania, the Pennsylvania Railroad constructed a modern industrial waste-treatment plant at its terminal and freight-classification yard located on the Susquehanna River at Enola, Pa. The railroad has extensive facilities at this point for maintaining and repairing steel freight cars and steam, electric and diesel-electric locomotives. In addition to the discharge from these operations, liquid waste at this terminal consists of the effluent from locomotive and car-washing operations, and from a quench pit for ashes, the sanitary sewage from buildings accommodating approximately 1,500 employees, and storm water from the yard drainage system. The principal reason for constructing the plant was to remove oil and suspended solids from the terminal effluent; treatment of the domestic sewage was a secondary consideration.

The Method of Treatment

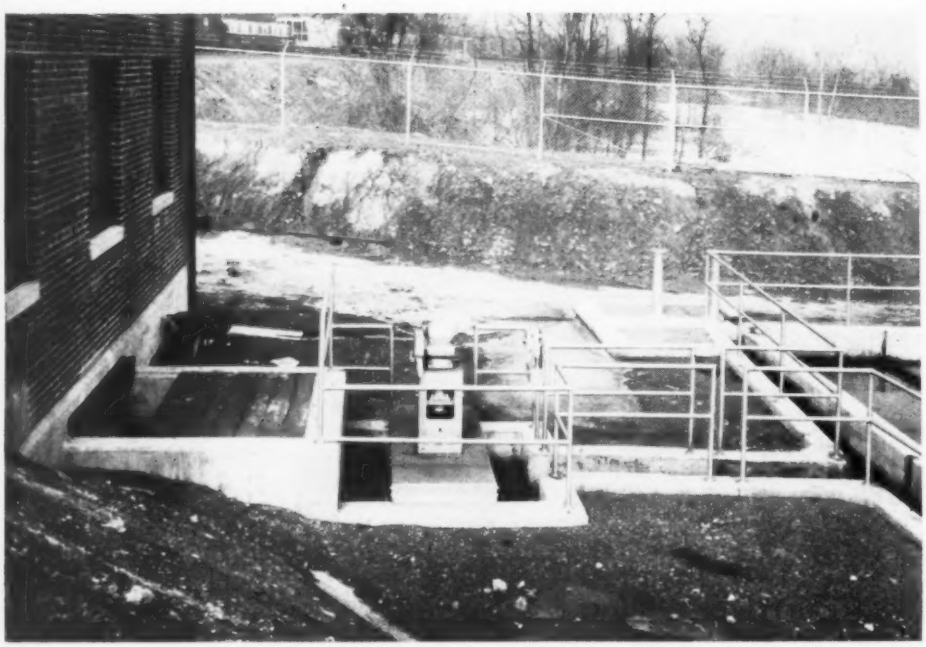
Treatment of the waste water at Enola consists of simple primary settling to separate the readily settleable solids and the floating oils, and subsequent chemical treatment to precipitate the fine oils and break up the fine oil emulsions. The plant consists essentially of two primary settling tanks, a flash mixer, two slow-mixing tanks, two secondary settling tanks, a combination pumphouse and laboratory, and two lagoons. It is designed for an average flow of 2 million gallons daily (m.g.d.) and a maximum storm flow of 4 m.g.d. During high storm-flow runoffs, which result in extreme dilution of the waste water, all flows over the 4-m.g.d. rate are by-passed at a diversion manhole directly into the Susquehanna.

The plan of operation is to have approximately one-third of the flow come to the treatment plant by gravity and the remainder elevated at the pumphouse into a plant influent sewer having a diameter of 24 in. After passing through a bar screen, which is hand raked to remove cotton waste and other large particles, the flow goes to one or the other of the two primary settling tanks, where the readily settleable solids and floating oils and grease are removed. From the primary tanks, the effluent passes to a flash mixer, where it is intimately mixed with alum and lime that has been previously added. The effluent then passes to the slow-mixing tanks for flocculation purposes. After flocculation, the waste water passes into the two secondary or final settling tanks where the fine solids and fine oil emulsions are removed, after which the effluent flows into the Susquehanna without further treatment.

No attempt is made to salvage the oils removed from either the



After passing through a bar screen, effluent from yard comes to these twin primary settling tanks where settleable solids and floating oils are separated and removed



The flash mixer (center) intimately mixes the alum and lime that are added to the effluent from the primary settling tanks for breaking up the fine oil emulsions

primary or secondary settling tanks for reclamation, and these oils, as well as the sludge removed, flow under hydrostatic pressure into a sludge disposal pipe line, where a portable centrifugal sump pump forces them into one of the two lagoons.

Primary Settling and Mixing

The primary settling tanks are of reinforced concrete and are each 9 ft. wide and 52 ft. long, and are designed for an average water depth of 6 ft. Although the flow is continuous, these tanks are designed to provide a 30-min. detention period at the design flow of 2 m.g.d., with a surface loading of 2,140 gal. per sq. ft. per day. Each tank has two steel notched effluent troughs, and the design overflow rate per foot of weir is 27,800 gal. per day. In addition, each tank has a sludge hopper at the influent end and is equipped with a Link-Belt Straightline primary-type longitudinal sludge collector, a Link-Belt Rotoline oil skimmer having a diameter of 10 in. and a telescopic sludge draw-off valve.

The sludge collector consists of two sprocket-mounted endless chains to which redwood cross flights are attached at about 10-ft. intervals. The collector is so arranged that it drags the settled solids from the tank bottom to the sludge hopper on its carrying run, while, on its return run, it skims the top of the tank and carries the floating matter towards the effluent end, where the skimmer picks up the scum and automatically deposits it into a trough. The skimmer is operated manually by means of a lever, but the sludge collector is driven by a motor through a worm reducing-gear, and a sprocket and chain.

To permit adequate settlement of the fine solids and to keep agitation at a minimum, the collectors are generally operated at slow speed only once a day. Although it is often assumed that each flight carries a certain volume of sludge ahead of it, as is the case with sand or other heavy materials, this is not the case with sludge or sewage, as the entire volume moves as a unit between any two flights and is carried to the point with a minimum of agitation.

The sludge is removed from the hopper by hydrostatic pressure through the telescopic draw-off valve, which is hand operated. Since a surprising amount of fine cinders accumulates in the hoppers of the primary tanks, a relatively high velocity is required to transport them through the sludge pipe to the lagoons—hence, the portable centrifugal sump pump.

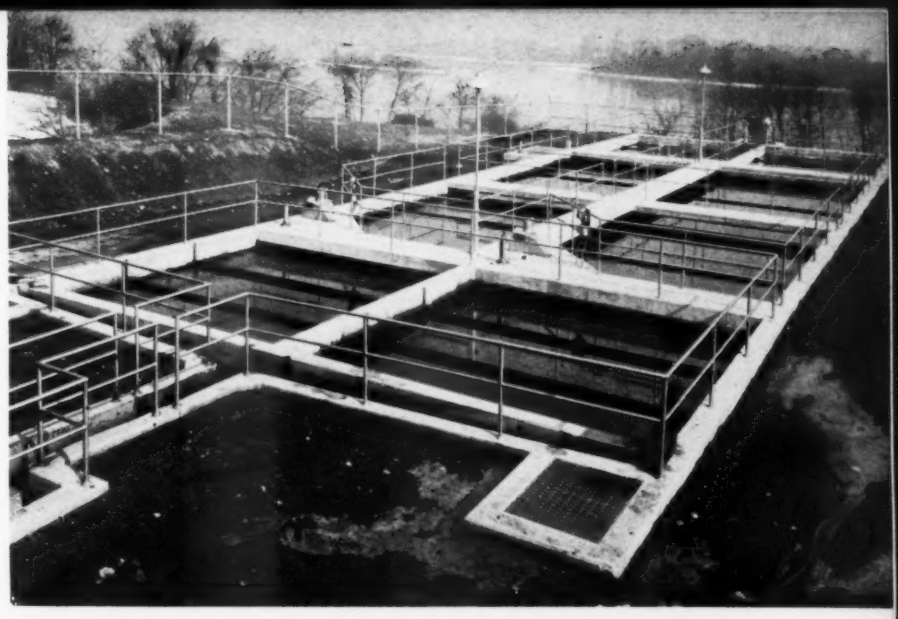
Chemicals Added

From the collecting trough of the primary tanks, the effluent passes under the pumphouse where the alum and lime are added. Since oil is the principal waste, it is mostly alum that is added, which breaks up the finely-dispersed oil emulsions. In quantities determined by analyses of water samples taken at several points in the treatment plant, the chemicals are added by means of two hand-operated Omega chemical feeders. The Ph factor of the water is held between 7.0 and 8.0.

The waste water then flows into the flash mixing tank, which is 6 ft. square in plan and built to hold water at a depth of 7 ft. This tank is equipped with a Link-Belt flash mixer, which consists of a four-bladed propeller suspended at the center of the tank from a shaft driven by a motor mounted over the top of the pit. The flash mixing tank is designed for a detention period of only 1.35 min., so the propeller is driven at a relatively high

speed to cause sufficient agitation for the initial mixing of the chemicals.

From the flash mixer, the waste water flows through a distributing trough into the two slow-mixing tanks where the coagulation and flocculation of the finely divided solids are accelerated during a detention period of 30 min. Each of these tanks is divided into three sections by transverse wood baffles, and is equipped with two lines of Link-Belt slow mixers, installed parallel to the flow. The mixers have redwood paddles that rotate on shafts extending into a dry well. One drive unit is employed for each tank and is designed to provide a peripheral paddle speed variable between 0.7 and 1.4 ft. per sec. This arrangement of the baffles and paddles builds up a swirling motion of the liquid and serves to reduce short-circuiting of the flow while assuring good distribution.



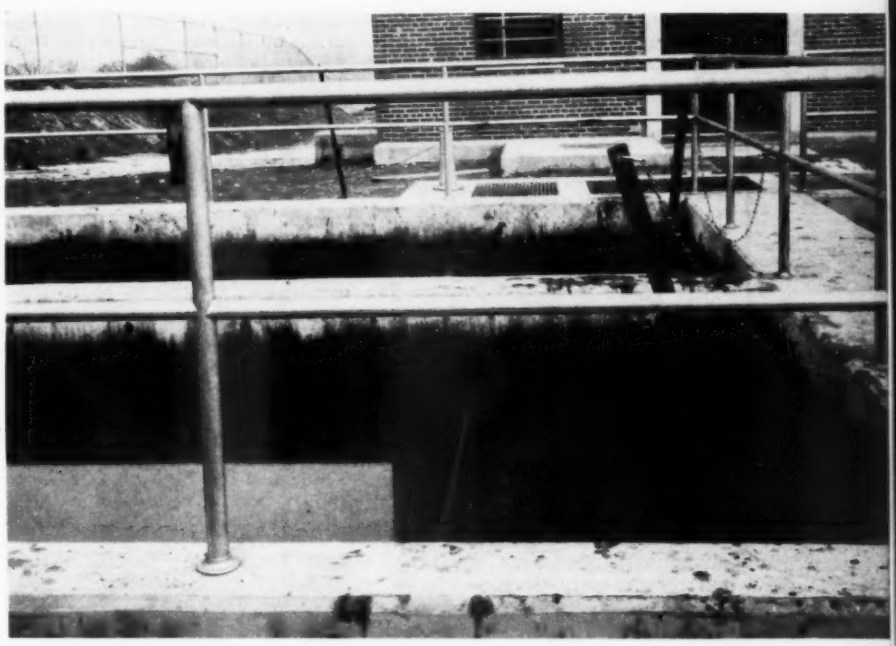
In slow-mixing tanks (foreground) chemicals produce coagulation of suspended materials, which settle in bottom of the long twin secondary settling tanks (background)

Final Settling Tanks

After flocculation, the waste water passes into the two final settling tanks, each of which is 18 ft. wide by 90 ft. long, having an average water depth of 8 ft. These tanks are designed to provide a 2.3-hr. detention period at the design flow, with a surface loading of 620 gal. per sq. ft. daily. Each tank has two steel notched weirs, and the design overflow rate per foot of weir is 14,000 gal. per day.

Each of these secondary tanks is provided with one Link-Belt longitudinal primary-type sludge collector and one 4-ft. wide cross collector. Although the final settling tanks of many water treating plants do not have much grease or oil present at this point of the treatment process, these tanks, because of the large amount of oil waste present, were provided with a 10-in. diameter oil skimmer, and the cross flights of the collector were designed to skim the water surface on their return run. A telescopic sludge draw-off valve was also provided for each tank so that both the oil and sludge could be drawn off at as high a concentration as practicable. The collectors in these tanks are operated almost continuously, although the oil and sludge accumulations are drawn off intermittently.

Two earth-embankment lagoons, with a total capacity of 6,300,000 gal., provide for the disposal of the sludge and oils from the settling tanks. Decanting pipes are also installed in the lagoons so that the supernatant liquor may be returned to the flash mixer for retreatment. When the lagoon runoff solutions become so concentrated that an exorbitant amount of chemicals is required for retreatment, it is planned to draw off the water from one lagoon at a time, set fire to the oils and grease, and remove the residue for waste fill material.

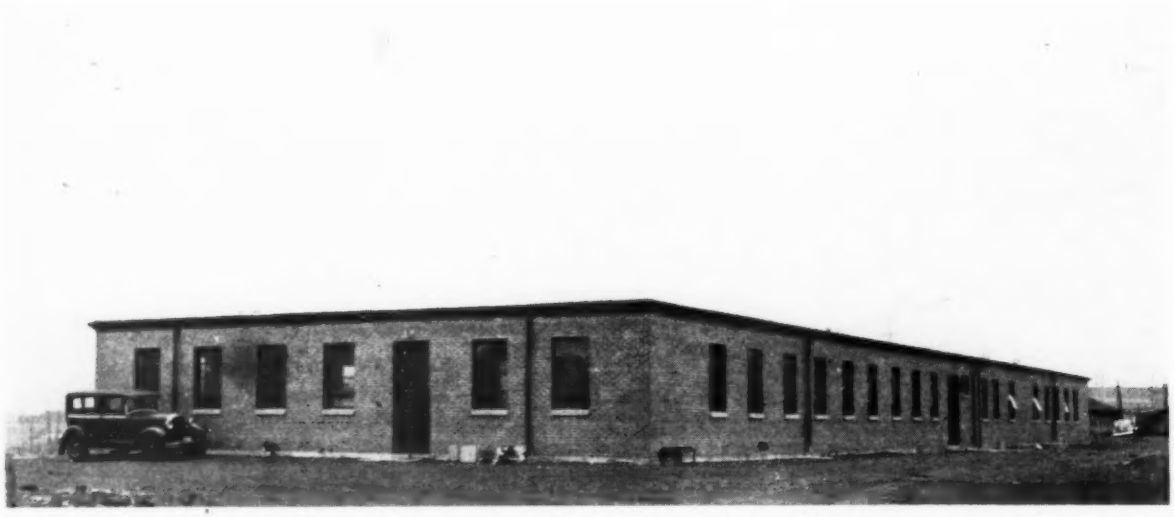


The floating oils and grease are skimmed off the surface of the water in the settling tanks and are pumped into a lagoon. Effluent goes into the Susquehanna river

Pumphouse and Laboratory

The pumphouse and laboratory building is a two-story concrete and brick structure, approximately 20 ft. by 30 ft. in size. This building houses the chemical feeding and storage facilities, Marlow plunger-type sludge and water pumps, electrical controls, flow meter, etc. The laboratory within the building is maintained for checking the efficiency of the plant operation.

The plant was constructed under the general direction of L. P. Struble, chief engineer, Eastern region, of the Pennsylvania. The design of the plant structures and waste treatment facilities was prepared by Gannett, Fleming, Corddry & Carpenter, Inc., consulting engineers, Harrisburg, Pa., while Brann & Stuart Co., Inc., Philadelphia, was the general contractor.



E. J. & E.'s new dormitory building at the east end of Kirk yard at Gary, Ind., houses 130 track laborers in addition to the commissary staff of 11 men. The laborers are recruited in Chicago and brought to the dormitory in trucks

To attract and hold labor for the track gangs used in maintaining Kirk yard at Gary, Ind., the Elgin, Joliet & Eastern constructed a dormitory building which the men term "the best labor camp in the country."

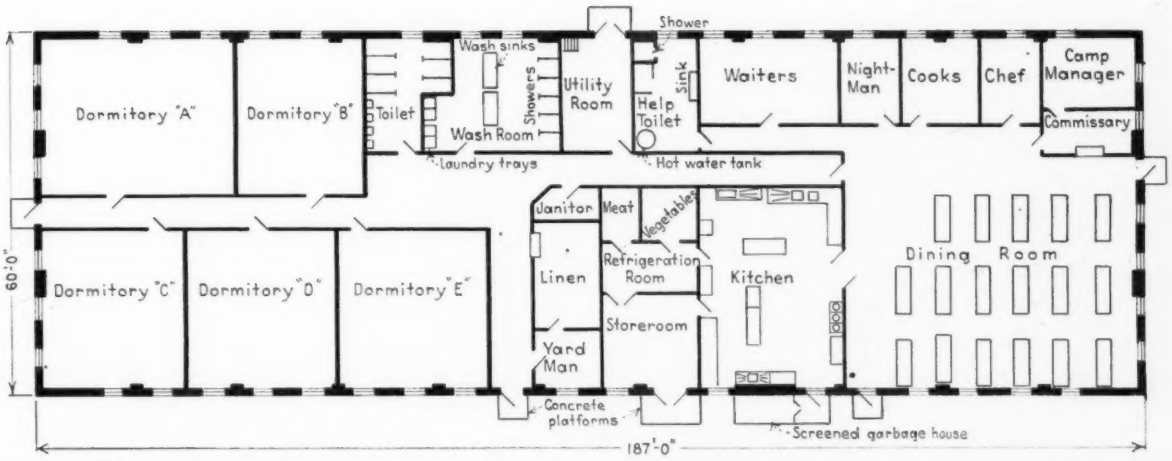
New Dormitory Helps Solve

• Some maintenance men will find it difficult to remember the time when it was easy to get enough men to man their sections around large industrial areas. However, despite the keen competition for labor with surrounding industries in the steel-producing and metal-working city of Gary, Ind., the Elgin, Joliet & Eastern believes it has found an excellent solution to its labor problem there in the form of a new permanent labor dormitory building recently constructed at Kirk yard.

Although the E. J. & E. employs all the local residents who are available in the Gary district, the road must obtain the larger part of its section forces in Chicago through a labor-recruiting commissary company, the B. F. Brown Company, Inc., Chicago. Owing to a current project underway for converting Kirk yard from a flat-switching to a retarder yard, a large expansion of the labor forces was necessary. This overtaxed the capacity of the road's permanent camp at Kirk yard and so a temporary car camp was maintained during the greater part of the year 1951. This car camp was discontinued last October when the new dormitory building was opened.

Because the buildings of the old Kirk yard camp are old and of frame construction, they were difficult to maintain and keep sanitary. So the "J" built the new completely modern dormitory with the intention of using it to house its transient maintenance labor at Kirk yard, and, after the reconstruction work has been completed, the old

Meticulously clean kitchen equipment and utensils gleam in the brightness of the kitchen. Meats and perishables are kept fresh in adjoining refrigerator rooms



Floor plan of the E. J. & E.'s new labor dormitory shows well the manner in which a single building may be employed to accommodate track labor forces together with the commissary material and personnel necessary to serve these forces

Labor Problem at Large Yard

Kirk Yard camp will be completely dismantled.

At one time, when the revamping project at Kirk yard necessitated it, there were more than 300 men employed in the section gangs there, but at the present time approximately 280 men, working in eight gangs, are employed on this work. Of this number approximately 265 men constitute transient labor and must be boarded in the new and old camp buildings.

The new dormitory is designed to accommodate 130 track laborers in addition to an 11-man commissary staff which, for the most part, has separate quarters off of the dining room. The building, which is 60 ft. wide by 187 ft. long, is a one-story concrete-block structure with an exterior of brick veneer, and is supported on a concrete foundation. The floor consists of an uncovered 5-in. concrete slab, and the flat roof is made of 6-in. Flexicore slabs overlaid with 1½-in. rigid insulation and built-up roof surfacing. The undersides of the roof slabs give an 11-ft. ceiling height above the floor. The building is constructed entirely of fire-resistant materials.

The large main dining room, where all the men are served "family style" at one sitting. Table tops are made of black Micarta and are easily cleaned

About one-half of the new building is made up of five dormitory rooms, toilet and wash rooms, and connecting corridors (see floor plan). The other half includes a large dining room, a kitchen, meat and vegetable refrigeration rooms, a staple-foods storage room, a linen and blanket storage room, sleeping rooms for the commissary staff, and a utility room.

Several Types of Heating Used

In laying out the heating plan for this building, consideration was given to the possibility of the men burning themselves through careless contact with heaters, so forced hot air was used to heat all of the dormitory rooms. The dining room is heated by both forced hot air and steam-fed unit heaters suspended below the ceiling. The

Three large coffee urns are in constant use because, in addition to being used for the 130 men during meal times, other yard and shop personnel drop in for meals and snacks. Double doors on the left open into the large main dining room

other rooms, except the cold rooms, are heated by fin-type steel radiator pipes, thermostatically controlled, and operating under a steam pressure of 20 p.s.i. Louvers are installed in the lower panels of all doors to the dormitory rooms to assist in the circulation of air.

Since the matter of easy cleaning is a major consideration in a building of this kind, all rooms and corridors have one or more floor drains in them so that the floors can be scrubbed and flushed by a hose connected to hydrants located in the corridors, dining room and kitchen. All windows are screened and are of the steel-casement intermediate-projected type; hence ventilation can be easily adjusted in each room as desired by the occupants. Also, each room is well lighted with several 100-watt fixtures, while the kitchen and dining room are brilliantly lighted by 500-watt fixtures. The interior wall faces, ceilings and partitions are all painted in pastel colors to give the rooms an especially attractive appearance.

The dormitory rooms are each fitted with 11 to 18 two-level steel cots, depending upon the size of the room, and "sleep" from 22 to 36 men. Each of these rooms is equipped with electric wall outlets; some of the laborers have taken advantage of these to install radios of their own. Steel wardrobe lockers are installed in the corridors to provide storage space for the personal possessions of the men. Benches and an electric water cooler are provided at a widened corridor space near the middle of the building so that the men can meet and talk without disturbing others who might be sleeping in the dormitory rooms. Also, the commissary company has furnished a television set within view of the men in this area for their entertainment.

The track laborers' washroom is equipped with wash sinks, showers and laundry tubs. It has been gratifying to note how many of the men make use of these facilities to keep themselves and their clothing clean.

Dining Facilities Are Popular

From the way that the men hurry from work to the dormitory building, wash up, and stand in line in the corridor leading to the dining room, it is apparent that they are hungry for the food and fellowship they enjoy there. Before the men file into the dining room, the 17 tables are each set generally for eight places and generous quantities of both hot and cold foods are placed "family-style" on them, except for the meats which are served individually. The benches and tables are of strong wood construction and, for easy cleaning, the top surfaces of the tables are of black Micarta.

The food is prepared by a chef, second cook and a vegetable man in a large kitchen that has been fully equipped by the commissary company with all of the essential work tables, cooking ranges, steaming kettles, coffee urns, and utensils. A power roof ventilator over the hood of the gas ranges and another roof ventilator keep cooking odors to a minimum. Several large garbage cans are distributed about the kitchen and the adjoining refrigeration room to promote cleanliness, and these are emptied at regular intervals into large containers placed on the floor of a screened garbage-house adjunct which is located just outside of the

The staple-foods storage room, where canned goods and dried vegetables, such as beans, peas, lentils (in containers in the foreground) are stored for ready use

kitchen door. Also, a covered loading platform is built outside of the door to the staple-food storeroom to prevent the wetting of foods delivered during inclement weather.

The cold rooms for the storage of meats and vegetables are lined with two layers of 2-in. cork slabs, and are equipped with freezing units operated through a compressor set on the floor of the nearby janitor's room.

For stated periods after the men have had breakfast or dinner (they carry their lunches), a commissary room, located in one corner of the dining room, is open for business. Here, cigarettes, cigars, candy, stationery and other supplies desired by the men are stocked and sold over a counter. When the stated "open" period is over, the room is closed by lowering a wood curtain.

Behind the commissary room is a combination bedroom and office for Stanley Hart, the B. F. Brown Company camp manager. Adjacent to this room and located along one wall of the building are located four sleeping rooms for the others of the commissary staff, and a toilet room, served by a separate corridor. One of these rooms is for the use of the chef; another is for a second cook, a pot washer, and a dish washer; the third is for the night man and the vegetable man; and the fourth is used by three to five waiters. Another member of the commissary staff, known as the yard man, has charge of the dormitory rooms, and has separate quarters adjacent to these rooms.

A steam-heated hot-water tank is located in one corner of the toilet room serving the commissary help. This tank has a capacity of 500 gal. and can produce hot water at the rate of 510 gal. per hr. for supplying the kitchen, the showers, and washing sinks in both of the washrooms.

A television set has been placed in the linen storage room by the commissary company, where it can be viewed by the men through a roll-curtain counter opening

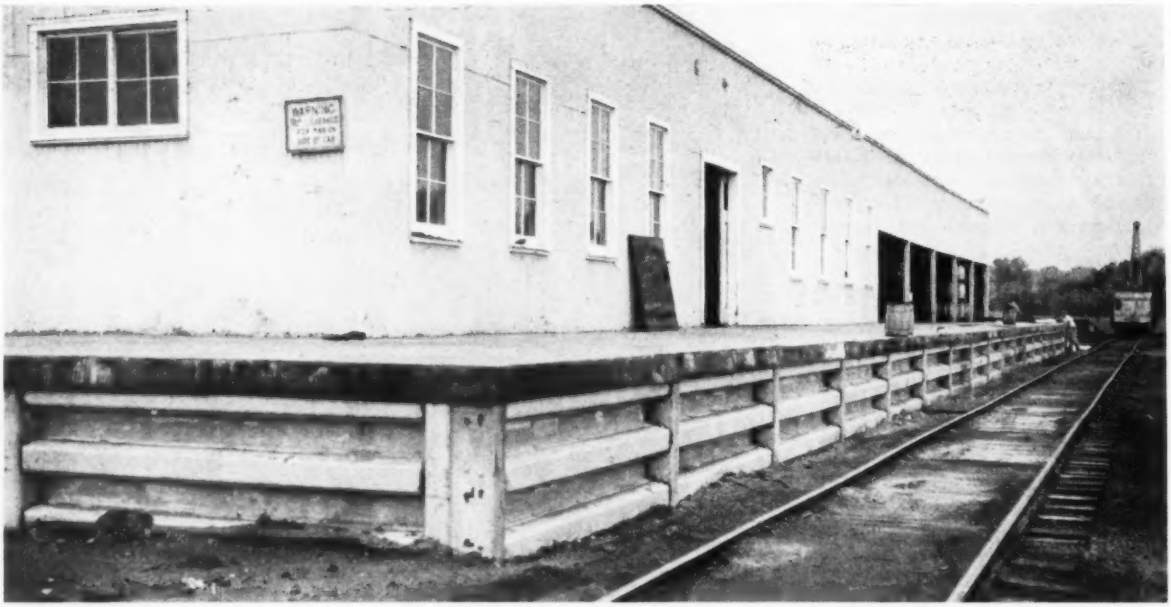
How the Men Are Obtained

Whenever a section gang in Kirk yard needs more men, the foreman makes a request to the roadmaster's office for the number required. If the request is approved, the camp manager is notified and he, in turn, directs the Chicago office of the commissary company to recruit the required number of laborers. Men obtained in this way are transported to the dormitory building by bus and report to the roadmaster's office for assignment to a gang. When assigned, the men are then entered on the "board roll" of the camp manager, are issued blankets and towels by the yard man and assigned to cots in the dormitory. A reasonable fee is charged by the commissary company for board and lodging and is deducted from the men's wages weekly.

The men housed in the new dormitory at Kirk yard have more than once referred to it as "the best labor camp in the country." From such expressions, the railroad is confident that its job of procuring and holding labor for Kirk yard will be quite a bit easier from now on.

The new camp building was built under the general direction of F. G. Campbell, chief engineer of the E. J. & E., while the construction work was under the direct supervision of S. H. Shepley, assistant chief engineer, and R. V. Dangremond, special roadmaster. Camp equipment was furnished by the B. F. Brown Co. and installed under the supervision of B. F. Brown, President.

After breakfast and dinner (the men carry their lunches), the commissary office opens and the men line up to purchase cigarettes, tobacco, candy, stamps, etc.



This elevated platform on the Toledo, Peoria & Western consists of a reinforced concrete slab poured on a sand fill contained by an Armco bin-type retaining wall

Joints between members of wall were caulked to prevent the escape of sand

Something New In Platform Construction

• In constructing an elevated platform along a maintenance-of-way storehouse at East Peoria, Ill.—a platform consisting of a concrete slab poured on a solid fill—the Toledo, Peoria & Western reports a considerable saving in the cost of the facility by the use of an Armco bin-type retaining wall for containing the fill. This construction was used instead of the poured-in-place type of concrete wall that is commonly employed for such installations. The saving is attributed to the lower in-place cost of the Armco wall as compared with an equivalent concrete wall.

As far as is known, this is the first time that an Armco bin-type wall has been used in the construction of a platform of this type. The road has found, however, that it is carrying out its function just as effectively as a concrete wall, and believes that its service life and maintenance costs will also compare favorably. In addition to its lower initial cost, the bin-type wall has the further advantage that, if the platform is ever dismantled, the wall can be salvaged and reused.

The bin-type retaining wall, which is more commonly used for stabilizing or confining embankments, is composed of overlapping iron units—longitudinal stringers and lateral spacers. These units are securely bolted to rigid U-shaped columns to form a series of connected cells that are completely closed on all four sides. The wall may be erected by unskilled workmen using only shovels and hand wrenches. Stability is provided by the weight of the filling material in the bins.

The use of the bin-type retaining wall made the construction of the platform at East Peoria a relatively simple job. First, the wall was erected to a height 4 in. below car-floor height and with its face at a distance of 10 ft. from the storehouse. The face of the wall was made vertical.

Next, a steel plate was welded to the face of the top stringer of the wall so that it projected 4 in. above the top of the wall. The bins as well as the space between the bins and the wall of the building were then filled with sand. Finally, after the sand had been leveled and thoroughly compacted, a 4-in. reinforced-concrete slab was poured on the sand fill, one edge of the slab abutting against the steel plate along the top of the retaining wall and the other edge against an asphalt expansion strip along the wall of the building.

The new platform thus constructed is 10 ft. wide by 180 ft. long. It extends the full length of one side of the maintenance-of-way storehouse and about half the width of one end. On it is operated a lift truck which is used to transfer maintenance-of-way materials from freight cars to the storehouse or vice versa.

WHAT'S THE ANSWER?

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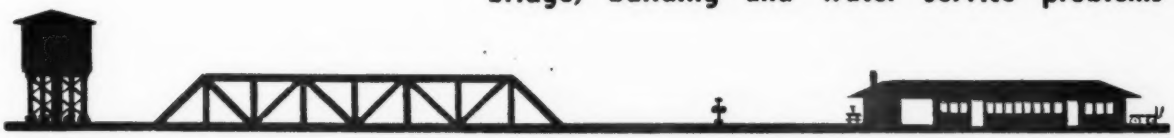

Installation and Care of Flanger Signs

Should flanger signs be left in place permanently? Why? If not, what disposition should be made of them when not in use? Of what materials should they be made?

Temporary Signs Are Better

By L. C. BLANCHARD
Roadmaster, Chicago, Milwaukee, St. Paul & Pacific, Minneapolis, Minn.

Flanger signs fall into two groups. In one are the permanent signs intended to be left up the year around, and in the other the temporary signs presumed to be put up each fall and taken down each spring.

Permanent signs should be made of metal pipe installed in a concrete base. Metal bars made of pressed pipe should be bolted, riveted or welded to the upper part of the upright to form a letter "X." The sign should be painted black to show up best against a white background of snow.

Permanent signs are neat in appearance and will save some money in seasonal handling. However, they have the disadvantage of being in the way of track mowers, ditching machines, ballast shapers and cut wideners. These signs require at least occasional straightening and they give the right of way a cluttered appearance. Should such a sign rust out or be damaged, it cannot be replaced immediately with material on hand, but must be requisitioned from the storehouse. For these reasons I do not favor the use of permanent flanger signs.

Temporary flanger signs should be made as simple as possible and of material available to all roadway maintenance forces. I would suggest making these signs out of 1-in. by 6-in. rough boards. The sign should be 7 ft. in total length with a reinforcing piece, 1 in. by 6 in. by 30 in., nailed to the bottom of the upright where it is set into the ground. A cross bar, 1 in. by 6 in. by 18 in., should be nailed 6 in. below the top of the upright to form a "cross" or letter "T." It is a waste of time and material to make an "X" or "V" for these signs because of the necessarily complicated angular saw cuts. A track maintenance laborer can make three of the simple "T" signs while making one of the "X" type and they are just as functional. Later, when the signs have to be replaced or repaired, the saving is repeated.

Temporary flanger signs made of wood should also be painted black. An economical way to do this is to paint them with a mixture of waste oil and lamp black. A black flanger sign can be seen through blowing snow much more clearly than can an unpainted sign. Its color is a safety factor not to be disregarded.

Temporary flanger signs should be put up each fall before the first snow is due and taken down each spring after the danger of heavy snow is past. These signs should not be hauled in to clutter up the station grounds, but should be racked up at convenient points along the right of way much in the same manner as slat snow fence is usually handled. A common and very satisfactory method is to drive four steel fence posts to form a rack six feet long and three feet wide. To this, tie a pair of cross bars 24 in. above the ground on which to lay the flanger signs. This will keep the wood off the ground to prevent rot and will also

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Answers to the following questions are solicited from readers. They should be addressed to the What's the Answer editor, *Railway Engineering and Maintenance*, 79 W. Monroe St., Chicago 3, and reach him at least 30 days in advance of the issue in which they are to appear. An honorarium will be given for each published answer on the basis of its substance and length. Answers will appear with or without the name and title of the author, as may be requested. The editor will also welcome any questions which you may wish to have discussed.

To Be Answered In the May Issue

1. In applying jam nuts, such as on switch rods, is it correct to place the thin, lock nut on the rod or bolt first or last? Why?

2. What methods and types of materials should be used for cleaning concrete, tile or terrazzo floors in stations or other railway buildings? What precautions are necessary?

3. Between what minimum and maximum limits of batter does welding of rail ends produce the most effective results from the standpoint of economy and other factors. What preparatory work should be performed before any welding is done? Explain.

4. Under what conditions, if any, should two or more lines of large-diameter culvert pipe be installed in a fill when drainage requirements indicate that one pipe is insufficient? What factors govern the choice of drainage structure in such circumstances? Explain.

5. To what extent, if any, should serviceable secondhand ties released from main tracks be used in yards, sidings, branch lines and newly constructed yard tracks? What are the advantages of this practice? The disadvantages?

6. How do the quality requirements of water for stationary automatic steam generators differ from those used on diesel locomotives? Why? What treatments are suitable for the stationary generators? Explain.

be high enough to clear most grass fires. After piling, the flanger signs should be wired down so that high winds will not disturb them. Some maintenance men like to tie these signs to the right-of-way fence adjacent to where they are to be reused. In some localities this may be quite satisfactory.

It is common practice to place flanger signs 100 to 150 ft. in advance of crossings, switches and other obstructions. Whatever distance is chosen should be made uniform throughout the entire division.

Thoughtful consideration should be given to the clearance distance such signs should be placed from the track. In territory where it is not expected to run cut wideners, ditching machines and other heavy snow fighting equipment, 6 ft. up to 12 ft. from the nearest rail may be satisfactory. However, where there is a possibility of running such machines, a clearance distance of 20 ft. from the nearest rail may not be too far. Fortunately a flanger sign 20 ft. from the track is generally easier to see and is much less likely to be damaged than one which is only 6 ft. away.

The wings on most ditching machines, when fully extended, will measure 40 ft. from tip to tip. Where flanger signs have not been set to clear these machines, the operator will have to choose between folding the wings for every sign or just mow them down. It is costly business any way you look at it. I might add also that highway-crossing signs, station one-mile signs, yard-limit boards and many other signs could just as well be set to clear these machines and save more money than is generally realized.

Flanger signs are a first-class safety device and they should be treated with all the respect due them.

How to Handle Waste-Oil at Terminals

Under what circumstances should devices be installed to separate oil from liquid waste at railway terminals? What other methods, if any, can be used to dispose of objectionable waste oil?

Gravity Systems Effective

By Wm. A. Gehle
President, Gale Oil Separator Company, Inc., New York

From the experience of the engineers of this company, we have no knowledge of an inexpensive method of disposing of waste oils that become entrained in waste water, particularly when it flows from diesel repair shops, wash-racks, sanding stations and fueling stands. In our waste-water system, the sediment or sand which may flow from the wash racks or sanding station, as well as the oils from the diesel repair shops and the fueling stands, either flows by gravity into a wet well or a pre-settling basin, where the sand and dirt settle. The oils and greases then pass by gravity through the separator and are removed.

The oils are withdrawn at certain periods, passing by gravity into a storage tank. Depending on the size of the separator, the storage tank has a reserve storage of 300 gal. to 3,000 gal. and a pump removes that oil either to drums on the surface of the ground, or to a tank truck.

This oil has a variety of uses. In some cases it is used by firms that make a business of spraying country roads to settle the dust. One railroad has found that this recovered oil can be used in starting fires in their steam locomotives. They have also sprayed it on weeds for eradication purposes.

On another railroad, oil taken from one of our separators is sent to a reclamation department, thoroughly cleaned of grit and dirt, and is mixed with other oils. These oils are then used in the journal boxes on freight cars. This is an exception, because most railroads find that this oil can't be used economically either for lubrication or fuel, unless enough is recovered to warrant the installation of refining equipment to clean the oil thoroughly.

Rather than go to this trouble, most railroads sell the oil to some outside firm that makes a specialty of collecting crankcase oils in gasoline stations and are usually reimbursed from two to three cents per gallon. One such firm collects the waste oil from each of our separator systems on two railroads and pays them three cents per gallon for it. The salvaged oil is then placed in a large sand pit and the water naturally settles to the bottom of the pit. When there has been a sufficient quantity accumulated, the top oil is pumped from the pit and sold to brick yards in the vicinity, at 8 cents to 10 cents per gallon.

We have designed waste-water treatment systems to handle the entire drainage from railroad yards. In these systems, rainfall, as well as the waste water and oils from the repair shops, fuel-loading platform, sanding station, and the storage yard, flows by gravity to a wet well above which two pumps are installed. When this wet well becomes filled with oil, water and grease, one of these pumps automatically starts to pump that mixture to a surge tank in which the heavy solids settle while the grease, oil and water pass through the separator which removes the oils and greases. The water then flows by gravity into the sewer. By installing such a system, it materially reduces the cost of excavating and constructing concrete pits. Furthermore, the maintenance crew will more readily maintain a system of this type which is installed on the surface of the ground than one in which it is necessary to climb down a manhole to check on the pumps, and to remove the accumulated oil.

Often a Chemical Problem

By T. A. Tennyson, Jr.
Chief Chemist, St. Louis Southwestern, Mt. Pleasant, Tex.

Oil and grease must be kept out of liquid wastes which are discharged to public streams or lakes (including harbors), or to ditches which run into such bodies of water, because pollution of these waters with oil is against the law. Since many cities do not permit oil and grease to be discharged into the sanitary sewer system, these materials must be removed before liquid wastes can be disposed of in this manner. Some water-pollution control districts, states and cities do give numerical limits, in the order of a few parts per million, for the maximum

amount of oil permitted, but this means practically oil-free wastes.

Before considering devices to remove oil from the liquid wastes at any railway terminal, a study should be made to determine why the oil is present in the first place and what can be done at the source to eliminate such waste. If the source of the oil arises through careless handling from overuse of lubricants or from leaky equipment, then corrective measures can be taken. Such conservation practices should save money for the railroad as well as eliminate the disposal problem.

In those cases in which it is impossible to eliminate all oil and grease from the liquid wastes at their source, such as at wash racks, some device should be installed to remove as much of these materials as possible from the wastes which are to be discharged to public waters, or enough to provide the maximum limit permitted for discharge into the municipal sewer system, if such is used for disposal. These devices may incorporate one or more of the chemical processes long known to railroad water chemists, or physical separation by means of traps or filters, or both. Recent developments in railroading have added materials besides oil and grease to the waste water from railway terminals which, because of their characteristics, must also be removed or neutralized before the liquid wastes can be put into public waters. Usually oil and grease can be removed along with the removal or neutralization of these other materials.

Waste disposal systems should be carefully designed and final plans should be cleared with the regulatory bodies involved. When built, they should be properly maintained, and their operation should be checked by a competent chemist.

When the separation of oil is necessary, the first device which comes to mind is the conventional gravity-type oil trap. This type of device may be successful in separating those oils having a gravity higher than 10 A.P.I. which do not form stable emulsions, but chemical processes must be added for oils with A.P.I. gravities lower than 10 and for oils which form stable emulsions.

Where oil constituents only are to be considered and their amounts are small, it is possible to remove them by simply passing the liquid waste stream through several bales of ordinary hay. Hay filters are sometimes needed to follow oil traps for final cleanup. Coke filters can also be used. In both cases the filter material must be renewed often enough to prevent its becoming saturated with oil thereby failing to function.

Where there is no danger of polluting a public water, liquid wastes containing oil can be stored in ponds. Water will evaporate and the oil can eventually be burned. Such a method should not be used if there is any chance of the contents of the pond overflowing into a public water. Such ponds should not be used in localities where they might constitute a public nuisance or a fire hazard.

After the oil is separated from the liquid wastes it must then be disposed of without contamination of public waters or in violation of smoke regulations. In some cases the recovered oil can be used as fuel for stationary boilers or incinerators. Where the oil is mixed with sludge from water-treating plants, silt, etc., it may be used for settling dust on roads about the terminal or as fill material.

Methods of Heat-Treating Switch Points

What methods are employed to heat-treat switch points? What special precautions are necessary? What are the advantages of such treatment?

Requires Close Heat Control

By G. H. Riddle
Sales Engineer, Bethlehem Steel Company, Bethlehem, Pa.

The heat treatment of trackwork accessories is probably the most important improvement developed over the past two decades as a means of reducing maintenance expense.

Heat treatment of trackwork materials was an innovation of the Bethlehem Steel Company with the initial installation made in New England more than 20 years ago. It is interesting to note that certain pieces of the original treated material are still in service, notwithstanding the relative crudeness of the first processes. Since then continued research has resulted in refined techniques with consequent improvement in the quality of the finished product.

To insure the proper rails for heat treatment they must be control cooled after the rolling operation. They are selected to obtain proper chemical composition and are then etch tested to assure homogeneity of the steel. Only first-quality rails should be used, eliminating all "A" Rails and "X-Rayls."

It is imperative that adequate treating facilities be available for effective heat treatment. To ensure the hardness and uniformity desired in this process, heat-treated rails must be given a complete quench and temper. Close control of temperature is essential. This feature is obtained by the use of specially designed furnace equipment with multiple-recording electric pyrometer control. The heat-treatment cycle used requires 18 to 20 hours depending on the weight of the rail.

By the use of these techniques a uniformly treated product is obtained, increasing the tensile strength of the rails 30 to 40 per cent above that of standard untreated sections and at the same time maintaining the ductility satisfactory to the type of service for which they are intended.

The end result is a product which increases the resistance of the rail to wheel wear and multiplies the potential service life from two to five times dependent upon operating conditions.

Several Methods in Vogue

By A. F. Huber
Chief Engineer, Ramapo Ajax Division, American Brake Shoe Company, Chicago

There are several methods of hardening switch points, each having certain advantages and some difficulties. All require careful handling and "know-how" to ensure satisfactory hardness at an economical cost and to assure that the rail receives no damage which could detract from its utility.

First, a full rail section, hardened to the A.R.E.A. specifications for heat-treated rail, can be

machined, generally by the same procedure used to shape ordinary switch points. This process is rather expensive because it takes longer to machine the hardened metal and normal production is thereby reduced. The final straightening operation must also be done carefully because of the elasticity of the heat-treated steel.

A second method consists of heat-treating a switch point after it has been completely machined. This method requires that the point be precisely placed in the furnace for heating, and handled into the oil bath carefully to prevent undue distortion. Because this method lessens the cost of the final straightening operation, some shop operators prefer to leave the base of the switch rail unmachined for the heat-treatment, in spite of the difficulty of later removing the hardened flange by planing. In any event, the switch point is not passed by the inspectors unless its surfaces are undamaged and its horizontal and vertical alinement fall within acceptable tolerances.

A third method is to surface harden only the top and gage side of a switch point using an oxyacetylene flame for the heating and an air quench for hardening. Using an efficiently designed torch and air quench, a trained operator can produce a surface hardness of about 350 Brinell, with the metal hardened about ¼ in. beneath the top and side surfaces. When the entire length of a switch point is hardened in this manner, the straightening difficulties are similar but somewhat less than those in a fully heat-treated switch rail. These difficulties are greatly reduced if only the point end is hardened, say for a distance of one-half the length of the side planing. This method reduces the cost considerably and is preferred for busy yard switches and in certain main-line turnouts because ordinary switch points are almost always taken out of service because of wear in this area.

Why Build Permanent Labor Camps?

Under what circumstances is it desirable to build permanent labor camps for maintenance of way employees? What considerations are involved in determining the location of such camps?

Have Discarded Labor Camps

By Jesse S. Hyatt
Chief Engineer, Chicago, North Shore & Milwaukee, Chicago

For many years we have found it more satisfactory to obtain our common track labor directly from an agency in Chicago, and our experience with the agency which we use (Standard Contracting Company) has been very satisfactory.

Formerly, we used labor camps, particularly in construction work and in major maintenance jobs. However, our turnover was always quite large and the bonus payment necessary to raise the quality of these camps to what we considered necessary to make them really attractive was quite high. Instead we found that it was better to pay a contract fee and to provide transportation for the men back and forth from Chicago. Our situation is rather unusual, I think, in that we have trains at the times these men would come and go which are largely "return-trip" trains balancing those handling the peak traffic into the city in the morning and out of the city in the evening.

Therefore, having worked out a system of payment that has been quite satisfactory, and working with a contract firm that is very fair both to the employer and to the employee, we feel that the method has proved very satisfactory. Under our particular circumstances, we would not think of ever returning to labor camps—either permanent or temporary.

Permanent Camps Desirable

By R. V. Dangremond
Special Roadmaster, Elgin, Joliet & Eastern, Gary, Ind.

During and since World War II, particularly in large industrial areas, it has become increasingly hard to recruit local labor for maintenance-of-way employees, not only because maintenance work on a railroad is one of the hardest types of labor, but also because the wages for labor in most industries are considerably higher than those now paid maintenance-of-way employees. These are the major factors making it desirable to build permanent labor camps for transient labor brought in by a boarding company or by the railroad to build up the maintenance forces sufficiently to progress the required work in a safe and economical manner.

On railroads serving large industries, a great amount of local emergency work is required from time to time, and unless men are readily available for call, either the work would require a full-time standby gang, which is very expensive, or delays would be caused that would be very costly and undesirable both for the railroad and the industry involved.

In a permanent labor camp the problem of calling men in seniority order for emergency work is taken care of in a relatively short time by men living in the camp long enough to gain seniority for calls and for bulletined positions. This is particularly true if the permanent camp is attractive enough from the standpoint of good food, sanitary conditions, etc.

Since local labor is not available to any extent in the industrial areas, it is obvious that in seeking men for promotion to track foremen, machine operators, truck drivers, welders, etc., labor must be available from the track-labor ranks and therefore must be selected from the best men in the permanent labor camp. On our railroad, we have been able to recruit on bulletined positions a few very good men for these types of occupation along with those we get from our relatively small amount of local labor.

It is not desirable to attempt to house and feed transient labor in rolling camps in most cases in large industrial yards because of constant conflict with city and state health and sanitary codes, along with the considerable amount of maintenance that always goes along with rolling camp equipment. A good many men are not attracted to rolling camps, especially in winter, and therefore, if sufficient men are to be had, this becomes a circumstance making it

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"I'll say their cost is low—let's see—$13.59 below ours to be exact."

"We better look into this, Jim. If they can have clean right of way at low cost, let's find out why ours is so much higher."

Yes, this matter of *average cost per mile per year* is what counts. Low cost per gallon may not be the answer to average low cost per year. If, for instance, you apply 150 gallons of $.40 per gallon weed killer, the final cost per mile runs high if you find $.50 chemical that requires only 100 gallons per mile.

Many things contribute toward low average cost. The chemical itself must be good, spray cars must be designed to permit of economy when conditions permit of light or spotty treatment. Above all else, the desire to turn in a low cost per mile must be paramount, so that chemical is not wasted and every gallon of chemical used is put to work under ideal conditions.

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PLANTS IN NUMEROUS RAILROAD CENTERS

desirable to build permanent labor camps that are attractive enough to hold the laborers for extended periods. One benefit derived from having a permanent camp on the property is the availability of close feeding facilities for local men who are held on the job during emergencies such as snow storms or floods.

Of course, in locations where it is not necessary to employ a large number of men all year, the expenditure for a permanent labor camp might not be desirable if it is practical to move in rolling camps for short periods. This can usually be done without too much conflict with city and state health officials.

There are many considerations involved in determining the location of permanent labor camps as well as the type of building to be used and the facilities to be installed in it. The camp should be placed so that the employees are centrally located to their various starting points on the job and therefore readily available when needed for emergency calls. Some consideration must naturally be given to the nearness of water, sewer, steam, electric, and telephone service for installation in the camp. The camp should be located as close to public transportation as is practical, and near enough to public roadways to permit deliveries of food and laundry, for garbage pickups, and to minimize delays in ambulance service, fire, and medical calls. The camp should also be located so that it can be checked frequently by railroad police to see that order is maintained and that regulations are observed.

As to the type of building and facilities to provide for a permanent camp, it is well to build a totally fire-resistant building which, of course, will materially reduce the future maintenance costs on it. The standard of living should be equal to or better than that to which the occupants are accustomed so that they will enjoy the quarters, be inclined to stay longer, and will not subject their quarters to abuse. The building should be properly insulated for economy in heating, ventilating, and for comfort both in winter and in summer. The interior finish and painting should facilitate cleaning and sanitation. Good ventilation and comfortable beds in bunkrooms are essential. Electric lights, running water for drinking, toilet, shower and washing facilities, along with adequate heating and ventilation, will go a long way in retaining desirable men in service.

A modern steam and electric kitchen will attract good, dependable cooks and bakers who obviously will tend to retain desirable men because of well prepared food and bakery goods.

We believe on our railroad that a permanent labor camp is desirable. We have found that the work output is very materially increased because of a well laid-out building with excellent facilities. In these times, it goes without saying that any method of holding labor and increasing the daily output of men is a good one.

Ground-Line Decay of Piles

What measures can be taken, if any, to prevent the decay of piles at the ground line? At the water line? Explain.

Treated Piles Resist Decay

By W. D. KEENEY
Engineer, Service Bureau, American Wood Preservers' Association, Chicago

Optimum conditions for decay of untreated or inadequately treated timber exist near soil contact or water surfaces. Moisture collects there and is retained in sufficient quantity to permit the rapid growth of fungi. A pressure-creosoted pile treated in accordance with American Railway Engineering Association specifications with an adequate retention of creosote and deep penetration of the preservative into the wood will remain sound at the ground line, as in other sections, for a very long time. Wood properly treated before installation is toxic to fungi and resists decay or insect attack regardless of moisture conditions that may develop at any point.

When untreated piles in place have started to decay near the ground or water line, practically nothing can be done to prevent continuing deterioration. Surface applications of preservative are generally futile. The wood can not be conditioned, and the preservative can not be forced into it in sufficient quantity or to sufficient depth to provide any effective protection.

Preservative treatment prevents decay by poisoning the food supply of the fungus, and other methods of preventing decay require elimination of air supply or moisture or the control of temperature, none of which would be practicable for piling in exposed structures. Coatings or encasements offer practically no help. They do not prevent or even retard moisture accumulation in the enclosed wood. *Per contra,* they usually retard any drying that might take place in a free circulation of air, and thus frequently accelerate instead of retard rot.

Various utilities have attempted in years past to prolong the life of untreated poles that had started to decay at the ground line. A typical process consists in excavating a hole some 3 ft. in diameter around the pole to a depth of about 18 in. and removing all decayed wood from the pole surface. A galvanized metal sheet 18 in. wide is then wrapped around the pole and wired, leaving a ½-in. space between it and the pole. The tie wire is then slipped down near the bottom and wedges inserted at the top between the pole and the sheet. These equally spaced wedges draw the bottom of the sheet tightly against the pole surface and spread the top to form a conical collar, the bottom edge of which is tacked tightly around the pole periphery. This collar is partly filled with fine dry sand, tamped in place. A mixture of sand and preservative is then carried to within 2½ in. of the top, and the remaining height filed with creosote. When the first application of creosote has been absorbed, more is added. A total of about three-fourths of a gallon of creosote is used.

Some of the largest experimenters apparently still question the value of such local treatments. Penetrations are insufficient to arrest internal decay and treatments are costly in proportion to the resulting increased life.

In railway structures, cutting off the decayed member below the ground or near the water surface where the wood is sound, and replacing the removed section with

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a sound treated timber, will, in most cases, be more practicable than attempting to retard advancing decay by superficial methods. Timber that is completely submerged will last indefinitely, and that below the ground line, even though above ground-water level, will remain sound for many years.

Several Methods Being Used

By Assistant Engineer

Several interesting methods of handling this problem of ground-line decay of piles or poles have been proposed within the last several years. Two of them are being used on poles and one to prevent or deter marine-borer attack (rather than decay) of piles at the water line.

A prominent chemical company, active in the wood preservative field, has developed a new product consisting of a five per cent solution of pentachlorophenol in fuel oil added to a jelling agent. This mixture has the consistency much like that of cup grease and will cling to wood surfaces where ordinary oil solutions will not. When in contact with wood, the oil moves into checks and crevices and good absorption is said to be obtained.

Proposed for protecting the base of poles, this grease is applied, after excavating around the poles at the ground line, by a paddle or less frequently by a caulking gun. It is then covered by a grease-resistant material to keep the grease on the pole rather than allowing it to diffuse into the surrounding soil after back filling.

Another method, used more extensively in England and Western Europe than in North America, employs a special tool to force a preservative into the pole under pressure. This method of re-impregnation is usually offered to the pole owner as a service which guarantees every pole against further decay.

To protect piles from marine-borer attack between high and low-water lines, an Australian has devised a simple, effective method that has resulted ('tis said) in savings of almost $100,000 a year at Sydney, Australia.

This method features a floating collar within which creosote is poured for automatic application to the pile as the tide rises and ebbs. The treatment, carried on for 24 hr., is said to be effective for a year and is given credit for reducing the incidence of sphaeroma and limnoria from a high of 80 per cent in 1927 to 5 per cent in 1951.

One Vs. Two-Course Concrete Floors

What are the advantages and disadvantages of one-course versus two-course concrete floors in railway buildings? Explain.

One-Course Floor Okay

By B. J. Shadrake
Assistant Engineer of Structures,
Erie, Cleveland, Ohio

The subject of one-course versus two-course concrete floors is one which apparently is good for perennial discussion in railroad construction and maintenance circles. Our experience has been almost entirely with one-course floors for use in shops, freighthouses, stations and office buildings. In fact, with very few exceptions, the one-course floor has become somewhat of a standard practice with us.

The main factor favoring the one-course over the two-course floor is the fact that the one-course floor is nearly fool-proof in the method of installation. The operations of placing the concrete on the subgrade, rough screeding to the approximate finished grade, floating and steel troweling to the desired finish are so simple and easy to control with a minimum of supervision that there is very little possibility of failure. The only way that this method can be tampered with is by the concrete design. This will sometimes be done by the workmen placing the concrete, for the purpose of easier placing and screeding. However, tampering with the mix design also induces excessive water gain on the surface with a consequent weakening of the concrete where the greatest resistance to wear is required.

The two-course floor may be installed by either one of two methods. In the first method, the base is placed and rough screeded ¾ in. to 1 in. below the finished surface. After the surface has taken its initial set, but well before the final set, the finish mixture is spread to the desired thickness and worked into the base while it is still wet so that the top finish is practically an integral part of the mass. The surface is then screeded, floated and troweled to the desired finish.

In the second method of placing two-course floors, the base is placed as usual, but is allowed to take its final set and the wearing surface placed at any time afterwards. Before applying the wearing surface, the base course must be cleaned of all loose material and thoroughly saturated with water. Just before the finish concrete is placed, all standing water must be broomed from the surface or absorbed with burlap, and a slush coat of neat cement mixed with water to the consistency of thick cream is then applied to the surface of the base and kept just ahead of the placing of the surface mix.

The procedure involved in placing the finish separately, if not performed properly, may lead to separation between the base and surface, especially in the second method where the base is allowed to take its final set. The entire success of the two-course method depends upon a perfect bond between the base and surface courses.

It is our experience that the two-course method provides a floor that is neither better nor easier maintained than the one-course system. On the other hand, it is more expensive and is often subject to premature failures.

Each Has Its Place

By L. H. Corning
Manager, Structural and Railways Bureau, Portland Cement Association, Chicago

The choice of any floor depends, first, on the service requirements, and, second, on the construction cost. The advantages and disadvantages of the type of floor are then based on its ability to meet these conditions. A two-course concrete floor is superior in performance and durability to a one-course floor, but is more costly to build. A one-course floor is entirely satisfactory for many purposes. Both types of floors have been used ex-

tensively in railroad construction for many years with good results. The difference in the performance between a one-course and two-course concrete floor is due primarily to the difference in the finish of the top surface and its wearing quality.

Concrete in a one-course floor is generally too wet and contains too little cement for proper finishing. The aggregate frequently lacks fines. This, combined with a wet, lean mix, contributes to bleeding and water gain, producing a weak, porous, nondurable wearing surface. Furthermore, because of this excess water which collects on the surface, a dusted-on finish is frequently used which also contributes to a poor wearing surface.

The disadvantages in the construction of a one-course concrete floor can be minimized by using a cement factor not less than 5½ sacks of cement per cubic yard of concrete and not more than 5½ gal. of water per sack of cement. If the aggregate lacks fines, some fine material should be added until the workability is such that excess water and fine material does not come to the surface. Care should also be exercised to see that the floor is cured properly after the concrete is placed and finished.

The use of modern power equipment for finishing concrete floors makes it possible to construct two-course, heavy-duty floors which will withstand the most severe service requirements. A topping with a water content as little as 4 gal. per sack of cement can be used to produce a hard, dense surface. Non-slip finishes can be obtained by incorporating non-slip aggregate in the topping and by roughening the surface. Floors resistant to heavy traffic can be obtained by using trap rock, carborundum chips or other hard aggregates in the concrete topping. Two-course floors should be used when special finishes such as terrazzo and colored finishes are desired, or because of its greater durability when the concrete is to be exposed to impact, rapid temperature changes or corrosive materials.

Another advantage of the two-course floor is obtained in multiple-story construction. The rough base slab can be cast and used during construction and the wearing surface placed later without delay to the work. If a one-course floor were used, it would be necessary to protect the finished floor during construction and work might be delayed while the floor was being finished.

There are many uses for both one-course and two-course concrete floors in railroad construction. One-course floors can be used for platforms and buildings where traffic is light, while two-course floors should be used wherever foot and truck traffic is heavy and dense. Concrete floors are best suited to station platforms and buildings, freighthouses, diesel shops and enginehouses, shops, office buildings and every place where a durable and low-maintenance, firesafe construction is desired.

Metallic Top Helps Either

By W. P. Geiser
Representative, The Master Builders Company, Chicago

The question of using one-course (monolithic) or two-course (topping) concrete floors in railway buildings should be decided on the basis of past experience and performance requirements. Since the surface of the floor is of first importance so far as floor maintenance and wear are concerned, assuming that the structural design of the concrete is correct, the performance requirement should normally determine which method should be used.

Concrete floors in railway use receive severe wear from steel-wheeled trucks and foot traffic, and falling tools or equipment. Most of this wear is caused by the abrasion or fracture of the cement and brittle aggregate in the concrete surface. In some cases the presence of oil, grease, acids or detergents may also cause disintegration of the concrete.

The following qualities are generally considered essential in a good floor: (1) Wear resistance; (2) ability to resist dusting; (3) low cost of construction and maintenance; (4) non-slip yet easy to clean surfaces; and, in some cases, (5) resistance to corrosion or sparking. The proper selection of aggregates for topping courses is extremely important requiring care in deciding whether to use pea gravel, trap rock, metallic aggregates or other commercially prepared materials. Similarly, care must be used in the choice of mix design and gradation, size and quality of aggregate for monolithic pours.

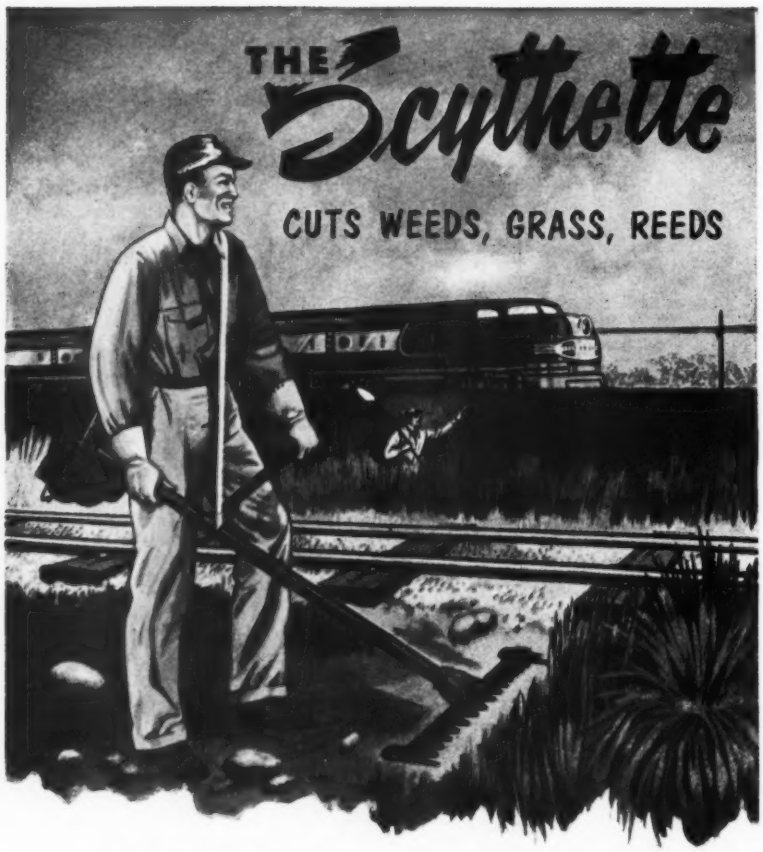
The use of metallic aggregate in the top wearing surface provides all the favorable factors for a good job either in monolithic or topping slabs. The only time a topping course is required with a metallic surface is when the "point" load requirements are more severe than the structural concrete will provide. Ordinarily a properly controlled monolithic slab pour with a metallic wearing surface is superior to and considerably cheaper than a topping course using brittle aggregates such as pea gravel or trap rock.

In general, the advantages of a one-course method are: (1) Cheaper construction cost; (2) it doesn't require any preliminary care or entail delay in getting the final floor finish; (3) it permits economic use of metallic aggregates to provide a tough and/or a non-slip wearing surface.

The disadvantages of a monolithic slab floor are: (1) It is more difficult to secure true grade or level; (2) it is more difficult to control bleeding and laitance; (3) it encourages the poor practice of shaking neat cement or cement and sand on the surface to absorb the water and facilitate finishing.

The advantages of a two-course floor are: (1) It prevents damage to floor surface during construction caused by heavy machinery being moved over the floor for setting; (2) it permits the use of lower-strength structural concrete in the base and higher-strength or denser concrete in the topping for heavy "point" loading; (3) it can be placed with a lower slump with which it is easier to obtain a good finish and grade level; (4) it permits the use of special aggregates in the topping or wearing surface.

The disadvantages of a topping floor are: (1) Increased construction cost; (2) possibility of loss of bond between structural slab and topping course; and (3) if applied after structural concrete is cured, it requires special care in cleaning and preparing surface to assure good bond.



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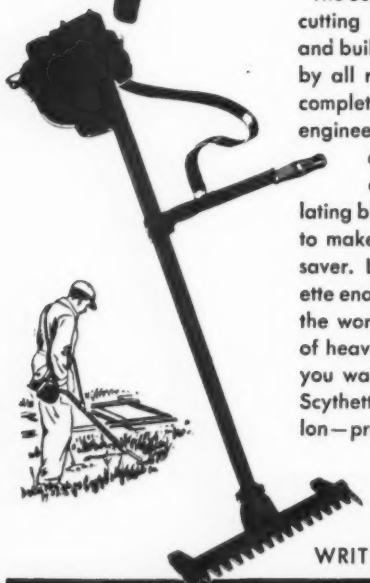

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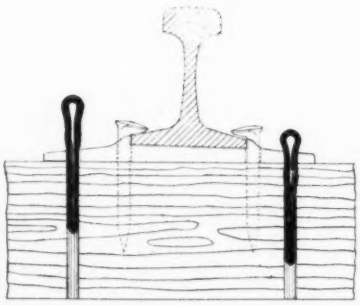

HOLD-DOWN FASTENING

THE Bernuth, Lembcke Company, Inc., Pittsburgh, Pa., has developed a hold-down fastening, known as the Tie Plate Lock Spike, designed to hold tie plates firmly in place on crossties or bridge ties and thereby reduce mechanical wear of ties. As shown in the accompanying drawing, the spike consists of a steel bar bent back upon itself in such a way as to form a spread shank and a wedge-shaped head. When it is driven to refusal through a tie-plate hole and into a pre-bored hole in the tie, the spread shank is compressed and the head becomes wedged in the tie-plate hole. Thus, play between the spike and the hole is eliminated and the plate is held against either horizontal or vertical movement by spring pressure.

The lock spikes are placed one on each side of the rail in diagonally opposite anchor-spike holes in the tie plate. They can be used with any standard tie-plate punching and can be quickly driven or removed with standard track tool.

A test installation of the lock spikes was established in August 1947 on the Louisville & Nashville near London, Ky., where the A.R.E.A. is conducting a test of various hold-down fastenings, and another installation was made there in September 1949. In addition the spikes have been installed on 15 other roads. According to the manufacturer, the lock spikes have given very satisfactory service in reducing tie-plate cutting and in holding gage. Moreover, it is reported that they hold their position in the tie, for it has not been found necessary to redrive them at intervals to tighten them in the plate.

For additional information, use postcard, pages 157-158

ADDITIONAL INFORMATION

On Any of the Products Mentioned in This Issue

Below is a complete index of the products referred to in both the editorial and advertising pages of this issue. If you desire additional information on any of them, use one of the accompanying addressed and stamped postcards in requesting it. In each case give name of product and page number. The information will come to you directly from the manufacturer involved, without any obligation on your part.

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THE MONTH'S NEWS

Railway Personnel

General

J. H. Hande, assistant to vice-president, operation and maintenance, of the Baltimore & Ohio at Baltimore, has retired after almost 47 years of railroad service.

J. P. Newell, assistant vice-president, operation, of the Pennsylvania, and an engineer by training and experience, has been appointed vice-president, operation, of the Pennsylvania with headquarters as before at Philadelphia.

Neil D. Hyde, assistant to the vice president of the New York Central, and formerly assistant to the chief engineer of the Lines West of Buffalo, has been appointed assistant vice-president, with headquarters as before at New York.

A. D. Wolff, Jr., assistant vice president and former research engineer of the New York Central, has retired after more than 40 years of service. Mr. Wolff, a native of Tremont, Pa., received a bachelor of science degree from the University of Pennsylvania in 1907. He joined the Central in 1910 as a draftsman, and

A. D. Wolff, Jr.

rose through a succession of promotions to research engineer in 1942. He was appointed assistant vice president in 1949. Mr. Wolff was associated with many railroad engineering improvements in the New York-Albany territory, including various Hudson division track improvements, the Castleton cutoff and the West Side improvements in New York.

R. H. Boykin, superintendent of the Wyoming and Jefferson divisions of the Erie, with headquarters at Dunmore, Pa., and an engineer by training and experience, has retired after 46 years of service.

John D. Morris, superintendent of the Pittsburgh division of the Pennsylvania,

(*Continued on page* 160)

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Railway Personnel (Cont'd)

and an engineer by training and experience, has been named assistant general manager of the Eastern region with headquarters at Philadelphia. Mr. Morris was born at Sykesville, Md., on December 7, 1905, and was graduated from the University of Maryland in 1926. He en-

J. D. Morris

tered railroad service in June 1926 as a rodman on the Pennsylvania and subsequently served as assistant supervisor of track, supervisor of track and division engineer. Mr. Morris was appointed superintendent of the Wilkes-Barre division in January 1942, transferring to the Panhandle division in January 1945, and to the Pittsburgh division in March 1948.

D. W. Brosnan, general manager of the Central lines of the Southern at Knoxville, Tenn., and an engineer by training and experience, has been

D. W. Brosnan

elected vice president, operation of the system with headquarters at Washington, D. C., succeeding **H. A. DeButts,** formerly a track supervisor on this road, who has been elected president of the Southern. Mr. Brosnan was born at Albany, Ga., on April 14, 1903, and was graduated from Georgia Institute of Technology in 1923. He served as resident engineer, Georgia State Highway Department from 1923 to March 1926, entering railroad service on the latter date as assistant engineer in the maintenance-of-way department of the

Southern at Macon, Ga., Mr. Brosnan subsequently held various engineering positions at Chattanooga, Tenn., Cincinnati, Ohio, and Somerset, Ky., and served as trainmaster at Oakdale, Tenn., and Birmingham, Ala. In October 1938 he was appointed division superintendent, which position he held successively at Selma, Ala., Macon and Birmingham. He was appointed chief engineer maintenance-of-way and structures of the Western lines, with headquarters at Cincinnati, in February 1946, and one year later became general manager of the Central lines at Knoxville.

Engineering

Benjamin P. Collins has been appointed assistant chief engineer of the Rutland, with headquarters at Rutland, Vt.

Howard F. Passel, division engineer of the Indianapolis division of the Baltimore & Ohio, retired recently after 48 years of service.

R. M. Brown has been appointed engineer, Utah division, of the Union Pacific at Salt Lake City. He was formerly resident engineer in charge of construction of a new terminal at Hinkle, Ore.

M. E. Koenig, supervisor of bridges and buildings on the Chicago, St. Paul, Minneapolis & Omaha at Madison, Wis., has been promoted to division engineer of the Western division, succeeding **M. S. Reid,** who has been appointed division engineer on the Madison division of the Chicago & North Western. Mr. Reid succeeds **L. C. Smith,** who has retired.

T. E. Price

T. E. Price, engineer maintenance of way of the Canadian Pacific at Winnipeg, Man., whose retirement was announced in the January issue, started his career in 1909 as a transitman on the Canadian Pacific at Vancouver, B. C. He served successively as assistant masonry inspector, assistant engineer hydroelectric power surveys, and in 1912, was appointed division engineer at Vancouver. Leaving in 1917 to serve with the Canadian Railway Troops overseas, he returned in 1919 as division engineer at Vancouver, and remained there until 1941 when he was appointed district en-

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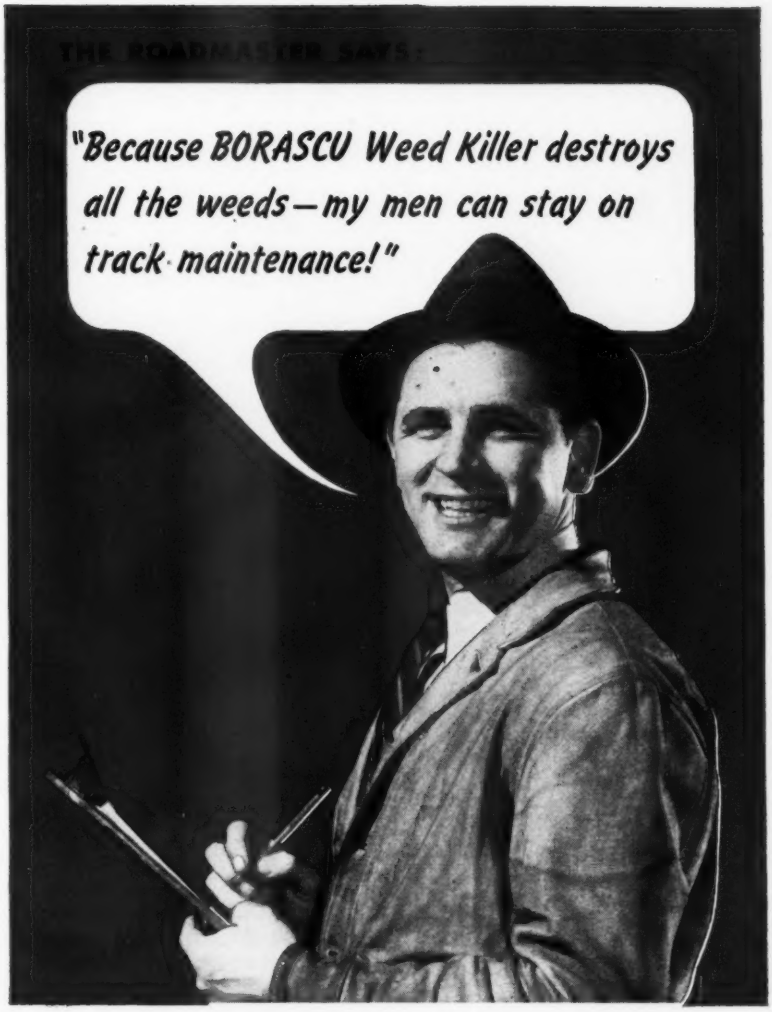

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Railway Personnel (Cont'd)

gineer of the Manitoba district. He was appointed engineer maintenance of way in 1944.

Carroll W. Sigmon, track supervisor on the Southern System, has been promoted to division engineer, with headquarters as before at Asheville, N. C.

C. R. Tinkler

C. R. Tinkler, assistant valuation engineer on the Southern Pacific, has been appointed valuation officer with headquarters as before at San Francisco, succeeding **J. B. Baker,** who has retired. Mr. Tinkler joined the Southern Pacific as assistant engineer on the Coast division in 1921, after engineering experience since 1908. He was advanced to assistant valuation engineer in 1947.

G. W. Rear, Jr.

G. W. Rear, Jr., whose promotion to the position of general fire prevention engineer on the Southern Pacific, with headquarters at San Francisco, was reported in the January issue, has been with that road since 1934. In 1939 he became assistant bridge and building supervisor at Tucson, Ariz., and since 1942 had held the position of general fire inspector.

T. P. Polson, whose appointment as chief engineer of the New York, New Haven & Hartford at New Haven, Conn., was announced in the January issue, was born on October 24, 1891, at Branford, Conn., and was graduated

For additional information, use postcard, pages 157-158

from Sheffield Scientific School, Yale University, in 1913. He entered railroad service in October 1913 as a rodman with the New Haven at Waterbury, Conn., and subsequently served as assistant engineer, assistant track supervisor, track supervisor, assistant division engineer, division engineer and maintenance engineer. Mr. Polson was appointed engineer of track at New Haven on December

T. P. Polson

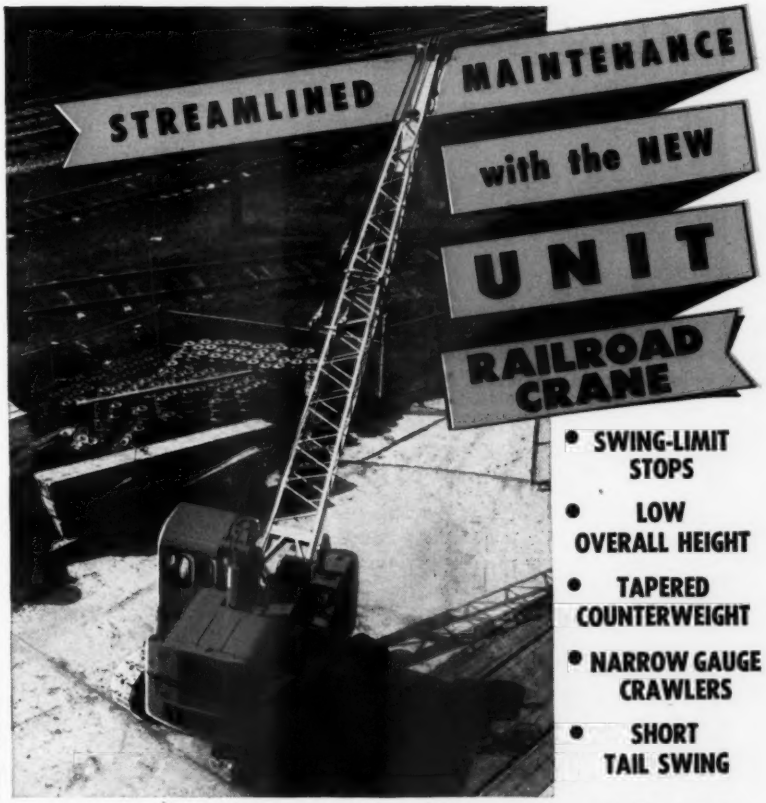
1, 1939, assistant to engineer maintenance of way on July 1, 1946, and assistant to chief engineer on May 16, 1950. He was advanced to engineer maintenance of way on January 1, 1951, and continued in that position until his recent appointment.

Nelson M. Kelly, whose appointment as district engineer of the Ontario district of the Canadian Pacific at Toronto,

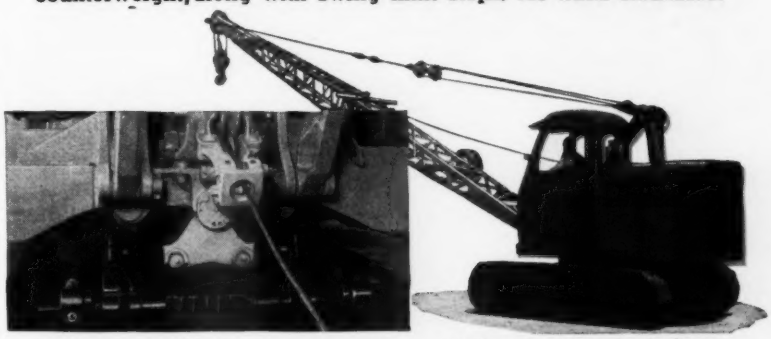
Nelson M. Kelly

Ont., was announced in the November issue, was born at London, Ont., on September 9, 1909, and was graduated from the University of Toronto with the degree of Bachelor of Applied Science (civil engineering) in 1937. Entering C.P.R. service in 1928 and serving in the summers until 1933 as rodman and with maintenance-of-way gangs, Mr. Kelly entered full-time service in May 1937 as a draftsman at Toronto. Following service as a transitman on the Schreiber division, assistant engineer at Toronto and assistant to the district engineer at North Bay, Ont., he was appointed division engineer of the Farnham division at Farn-

(*Continued on page* 164)



Many of the features found in the UNIT 1020R were built around the ideas and suggestions of railroad engineering specialists. Its modern design assures fast, easy control, both in crane and excavator operation . . . on the line, or off-the-track. A low overall height allows for underpass clearance. Narrow gauge crawlers permit unloading in, and moving through, gondolas. A tapered counterweight, along with swing limit stops, for track clearance.



Swing-Limit Stops act as automatic guides where space does not permit a full swing. Eight cushioned stops offer a selection of working ranges within safe operating limits. Prevents fouling the adjoining track, or striking obstacles when working in confined quarters.

With a reputation for high production and economical operation, the UNIT 1020R is a machine you'll want to know more about . . . Write for complete details regarding specifications and working ranges.

UNIT CRANE & SHOVEL CORP. 6403 W. Burnham St., Milwaukee 14, Wis., U.S.A.

SHOVELS • DRAGLINES • CLAMSHELLS
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Problem:

BRIDGE TIES ARE SPLITTING . . . HEADED FOR COSTLY FAILURE!

Unless retarded, splits and cracks in ties get progressively worse, thus exposing heart of tie to decay and eventual failure. And the replacement of bridge ties is particularly costly.

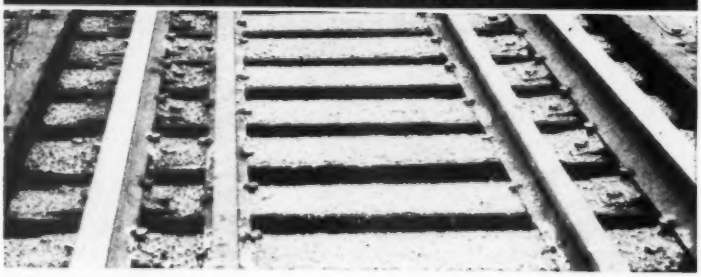
Solution:

KOPPERS TIE-SEALING COMPOUND IS APPLIED!

Koppers Tie-Sealing Compound, a new specially-processed coal-tar coating, is being applied by brush. Compound covers top surface of tie with water-resistant coating. Fills in and seals up cracks . . . retards their spread.

Result:

TIE LIFE LENGTHENED! . . . COST REDUCED!



These 14-foot bridge ties are set for many more years of useful service. An estimated 5 to 10 years or even longer. Splitting and checking action caused by expansion and contraction is reduced. Maintenance costs are cut. Of importance to many railroads is the fact that the covering of fine stone is an armor against fire hazards.

KOPPERS

Use Tie-Sealing Compound on your railroad system. Details and price information on request.

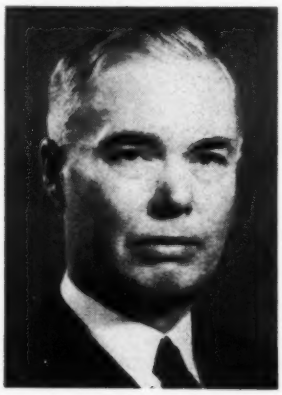
KOPPERS COMPANY, INC.

Tar Products Division Pittsburgh 19, Pa.

Railway Personnel (Cont'd)

ham, Que., in July 1942, and was transferred to the Montreal Terminals division five years later. In April 1949 he was appointed assistant engineer in the office of the engineer maintenance of way at Toronto, in which capacity he served until his recent promotion.

W. G. Dyer, whose appointment as engineer maintenance of way of the Prairie and Pacific regions of the Canadian Pacific at Winnipeg, Man., was announced in the January issue, entered railroad service with that company in 1923 as a rodman at Regina, Sask. He served as building inspector and transit



W. G. Dyer

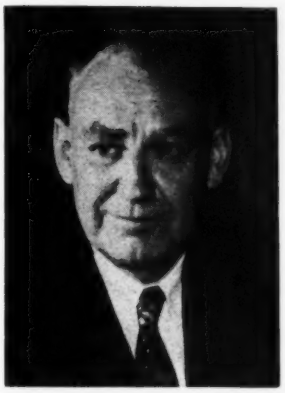
man, and in 1936 was appointed roadmaster at Prince Albert, Sask. He became division engineer at Moose Jaw, Sask., in 1941, and in 1943 was transferred in that capacity to Penticton, B. C. He was appointed engineer of track at Montreal, Que., in 1946, and in 1948 was named district engineer at Vancouver, B. C., the position he held until his recent appointment.

W. G. Merritt, whose promotion to assistant division engineer on the Seaboard Airline at Savannah, Ga., was announced in the January issue, entered the service of that road in June 1949 as a laborer while on vacation from North Carolina State College. Upon his graduation the following year, he was appointed a student engineer in the division engineer's office at Raleigh, N. C., in which capacity he remained until June 1950 when he was named assistant to the division engineer at Atlanta, Ga., the position he held prior to his recent promotion.

H. A. Hunt, special engineer of the Southern Pacific Lines in Texas and Louisiana, has been appointed division engineer with headquarters at San Antonio, Tex. **R. G. Schultz** has been appointed special assistant engineer, succeeding Mr. Hunt. **J. F. Scheumack** has been appointed bridge engineer and inspector, with headquarters at Houston, Tex. **M. F. Shane** has been named to the newly created position of assistant engineer, water and fuel service at Houston.

E. E. Oviatt, who has been named consulting engineer and whom Mr. Pol-

son has succeeded as chief engineer, was born at New Britain, Conn., on July 13, 1891, and was graduated from Sheffield Scientific School in 1913. He began service with the New Haven in 1913 as a rodman at Waterbury and subsequently served as transitman, assistant



E. E. Oviatt

engineer, track supervisor, division engineer, maintenance engineer and engineer maintenance of way. Mr. Oviatt served as chief engineer of the New Haven from 1931 until his recent appointment as consulting engineer. He is a past president of the New England Railroad Club.

Track

Gabriel Gyenes, whose appointment as supervisor of track on the Central of Pennsylvania at Ashley, Pa., was announced in the December issue, was born in Hungary on May 28, 1911, and received his education in the schools of that country. He entered the service of the Jersey Central on September 10, 1928, as a laborer at Jersey City, N. J., and subsequently served as assistant foreman and extra gang foreman. He ran a work train from 1941 to 1947, when he was advanced to general foreman on the New York & Long Branch at Long Branch, N. J. On March 1, 1951, Mr. Gyenes was appointed assistant supervisor of track on the Jersey Central at Somerville, N. J., where he remained until his recent promotion.

William Baerthlein, whose promotion to supervisor of track on Subdivision 27, Pennsylvania division, of the New York Central, with headquarters at Clearfield, Pa., was reported in the December issue, was born at Guttenberg, N. J., on November 15, 1912, and was graduated from North Carolina State College with the degree of Bachelor of Science in engineering in June, 1938. He began work with the New York Central as a laborer on the Eastern division during summer vacation in 1936, and the following summer served as a bridgeman helper. Upon graduation, he entered full-time employment with the railroad, serving consecutively as chainman, rodman and transit man on the Eastern division at New York until March 12, 1942, when he en-

(*Continued on page* 166)

Preferred power for self-contained refrigerating units on motor-cargo trailers — the world's most widely used single-cylinder gasoline engines.

BRIGGS & STRATTON single-cylinder, 4-cycle, air-cooled gasoline engines are the "Preferred Power" leader — on equipment, machines, tools, appliances used by the transportation, construction, oil-fields and other industries — and on farms. Briggs & Stratton Corporation, Milwaukee 1, Wisconsin, U. S. A.

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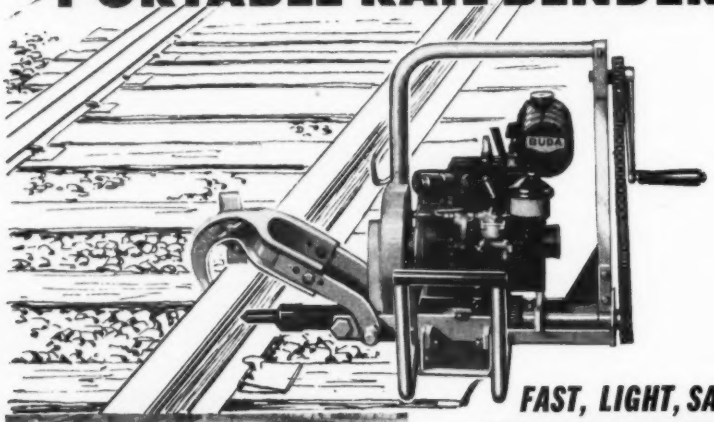

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Equip your track gangs with Buda Power Track Drills and watch them meet rail laying schedules with ease. Designed and built for railroad work, these Track Drills have every feature the track man wants. Write for complete information and illustrated Bulletin.

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Make stock rail bends and guard rail bends on the job . . . save time, money. One man can easily bend 152 lb. rail cold. Calibrated scale on jack ram assures exact duplication of bends. Ball bearing jack assures easy operation. Supplied with 25 or 35 ton special journal jacks. Illustrated Bulletin available. Write for it today.

The Buda Company, Harvey, Illinois.

BR 5

BUDA — SERVING THE NATION'S RAILROADS SINCE 1881

Railway Personnel (Cont'd)

tered military service. Upon his release from that service on April 1, 1946, Mr. Baerthlein returned to the railroad as assistant supervisor of track on Subdivision 30, Buffalo division, at Rochester, N. Y., and subsequently served in that capacity on Subdivision 8, Mohawk division, at Oneida, N. Y., and Subdivision 13, Buffalo division, at Buffalo, N. Y. It was from the latter post that he was promoted to supervisor of track.

E. J. Brosnahan, acting supervisor of track on the Illinois Central at Mattoon, Ill., has been promoted to supervisor of track at Pana, Ill., succeeding **R. B. Radkey,** whose promotion to assistant engineer ties and treatment is reported elsewhere in these columns.

C. A. Ford, assistant supervisor of track on the New York Central at Utica, N. Y., has been promoted to supervisor of track at Corning, N. Y., to succeed **C. R. Swanson,** who has been transferred to Batavia, N. Y., where he replaces **H. W. Horman,** who has been transferred to Utica. **Wolters Ledyard,** assistant engineer in the office of engineer maintenance of way at New York, has been appointed supervisor of track at Watertown, N. Y., to succeed **Owen R. Mench,** who has retired after 49 years of service. **Rufus A. Houghton,** supervisor of track at Columbus, Ohio, retired recently after more than 49 years of service, and **Louis N. Johnson,** assistant supervisor of track at Mahaffey, Pa., has retired after 50 years of service.

L. E. Ward, whose promotion to supervisor of track on the Pennsylvania at Ashtabula, Ohio was announced in the January issue, entered the service of that road in June 1948, after his graduation from Kansas State College, as a junior engineer at Coshocton, Ohio. Mr. Ward was appointed assistant supervisor of track at Chicago on January 15, 1950 and was transferred in that capacity to Newport, Pa., on September 1, 1950, which position he held until his recent appointment.

D. R. Pinkerton, whose promotion to supervisor of track on the New York Central at Elyria, Ohio was announced in the January issue, entered the service of the Central as a laborer at North Hayden, Ind., on June 15, 1925. He was later promoted to section foreman at Gary, Ind., and in 1938 was named extra gang foreman at Englewood, Ill. Mr. Pinkerton was appointed assistant supervisor of track at Chicago in 1947, which position he held until his recent promotion.

R. A. Jones, Jr., whose promotion to supervisor of track on the Pennsylvania at Akron, Ohio was announced in the January issue, was born at Walpole, Mass., on November 10, 1926. After his graduation from Tufts College, Medford, Mass., in 1948, he entered the service of the Pennsylvania as a junior engineer at Crestline, Ohio on February 20 of that year. He was appointed assistant supervisor of track at Lock Haven, Pa., on

For additional information, use postcard, pages 157-158

November 1, 1948, where he remained until his transfer in that capacity to Baltimore, Md. on November 1, 1949. Mr. Jones was named supervisor of track at Akron on December 1, 1951.

Bridge and Building

W. B. Mackenzie, maintenance bridge engineer of the St. Louis-San Francisco, has been appointed bridge engineer, with headquarters at Springfield, Mo. He succeeds **R. B. Hennessy,** retired after 42 years of service.

C. O. Sathre, supervisor of bridges and buildings on the Chicago & North Western at Norfolk, Neb., has been appointed supervisor of bridges and buildings on the Chicago, St. Paul, Minneapolis & Omaha at Madison, Wis., succeeding **M. E. Koenig,** whose promotion to division engineer is reported elsewhere in these columns.

Special

R. B. Radkey, supervisor of track on the Illinois Central at Pana, Ill., has been promoted to assistant engineer ties and treatment at Chicago.

Obituary

L. W. Althof, district engineer for the Union Pacific, died December 11, at the age of 65, in his home in Portland, Ore. Mr. Althof, born in Oakland, Cal., in 1886, joined the Union Pacific in 1911 at Salt Lake, Utah. During his career he had served on every district of the railroad as district engineer, division engineer, maintenance-of-way engineer, or assistant engineer. He had been a division engineer with headquarters at Portland since 1935, except for a period in 1941-1942 when he served as district engineer at Omaha, Neb. He was promoted to resident engineer at Portland in 1948 and was subsequently appointed district engineer.

Association News

American Concrete Institute

At the annual convention of this organization, which is to be held at the Netherland Plaza Hotel, Cincinnati, Ohio, February 26-28, there will be two addresses by railroad engineers, both of which will be presented at a session on February 26 on Durability and Curing. One of these papers, entitled "Field Studies of Durability of Railroad Concrete," will be presented by R. W. Gilmore, general bridge inspector, Baltimore & Ohio, Cincinnati, and the other entitled "General Condition of Concrete Railroad Structures and Research Program on Surface Water-Proofers," will be presented by C. B. Porter, assistant chief engineer, Chesapeake & Ohio, Richmond, Va.

(*Continued on page* 168)

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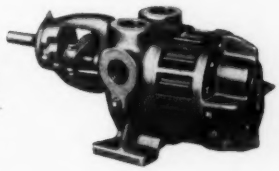
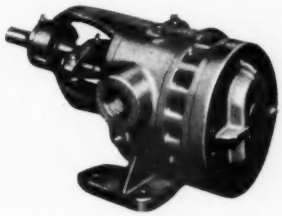
Four-port design offers 8 optional piping arrangements. Equal size helical gears run in axial hydraulic balance. Standard or bronze fitted; packed box or mechanical seal. Up to 300 P.S.I.—1 to 300 G.P.M. for clean liquids.





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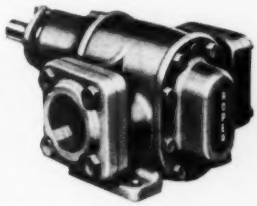

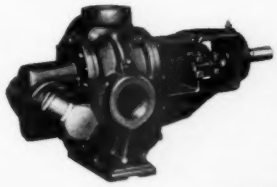

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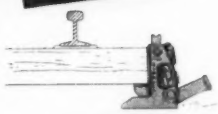

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Aluminum Alloy Housing—41½ lbs. Light—15 Tons Strong!

For general track jacking. Built with 40% extra support at stress points to equal strength of malleable jacks that are 45% heavier! Large toe lift area (2½" x 3¼") permits jacking under ends of ties without damage. Shorter fulcrum center. Safety thumbguard. Lifts full capacity on cap or toe! Height 22¾" with 13" lift.

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Association News (Cont'd)

American Railway Engineering Association

The program of the annual meeting, which will be held at the Palmer House, Chicago, March 11-13, will follow much the same pattern as the last two years, with no overlapping sessions, and with presentation of reports on related subjects grouped in the same sessions, insofar as possible, supplemented by papers and addresses of special import or timely interest. Of particular interest again will be many reports on the large and increasing number of research projects being carried out by or under the direction of A.R.E.A. committees.

For the convenience of those who may wish to make advance plans for their stay in Chicago, the tentative convention program is as follows:

Tuesday, March 11
Morning Session—9:45 to 12:15
(Grand Ballroom)

Address of President T. A. Blair
Reports of the Secretary and Treasurer
Greetings from the Signal Section, AAR, E. S. Taylor, chairman
Greetings from the Electrical Section, AAR, H. C. Paige, chairman
Address by J. H. Aydelott, vice-president, AAR
Address by G. M. Magee, research engineer, Engineering Division, AAR
Reports of Committees
14—Yards and Terminals
16—Economics of Railway Location & Operation

Afternoon Session—2:00 to 4:45
(Grand Ballroom)

Reports of Committees
9—Highways
24—Cooperative Relations with Universities
20—Contract Forms
11—Records and Accounts
13—Water Service and Sanitation

Wednesday, March 12
Morning Session—9:00 to 12:00
(Red Lacquer Room)

Reports of Committees
7—Wood Bridges and Trestles
28—Clearances
29—Waterproofing
30—Impact and Bridge Stresses
8—Masonry
15—Iron and Steel Structures

Association Luncheon, 12:00 Noon
(Grand Ballroom)

Announcement of results of election of officers
Address of guest speaker

Afternoon Session—2:30 to 5:15
(Red Lacquer Room)

Reports of Committees
17—Wood Preservation
6—Buildings
27—Maintenance of Way Work Equipment
22—Economics of Railway Labor
1—Roadway and Ballast

Thursday, March 13
Morning Session—9:00 to 12:30
(Grand Ballroom)

Reports of Committees
Special Committee on Continuous Welded Rail
3—Ties
5—Track
4—Rail
Closing Business
Installation of Officers

The outstanding social function of the meeting will be the annual luncheon, Wednesday noon, March 12, in the Grand Ballroom, which will be featured by an air of entertainment, special recognition to committee chairmen, announcement of the annual election of officers, and an address by a top railway officer. The secretary's office is now ac-

cepting reservations for the luncheon. The tables will seat 10 persons, and reservations may be made for any number of places. In this connection, for the first time, tables, to the extent required, will be set aside for Junior Members only, in the interest of giving these younger members of the association an opportunity to get together and become better acquainted.

Women accompanying their member husbands to the convention will be given an opportunity to meet all other women in attendance, and will be directed to special places and events of interest in Chicago. In addition, they will be guests of Mrs. Blair at a reception and tea to be held on Tuesday afternoon. Women's headquarters will be in Room 11 on the third floor of the Palmer House, where all women guests will be greeted, provided with identification badges, and advised concerning "What's Going On in Chicago" and how to get there.

As listed in the 1952 Outline of Work pamphlet mailed to all committee members in December, seven new committee chairmen and eight new vice-chairmen will take over the direction of committee work with the close of the 1952 annual meeting. These men are as follows:

Committee 3—Ties: P. D. Brentlinger (chairman), forester, Pennsylvania, Philadelphia, Pa.; L. C. Collister (vice chairman), superintendent treating plant, Santa Fe, Albuquerque, N. M. Mr. Brentlinger will succeed B. D. Howe, chief lumber inspector, Louisville & Nashville, Louisville, Ky.

Committee 4—Rail: C. J. Code (chairman), engineer of tests—maintenance of way, Pennsylvania, Philadelphia, Pa.; B. R. Meyers (vice-chairman), assistant chief engineer, Chicago & North Western, Chicago. Mr. Code will succeed Ray McBrian, engineer of standards and research, Denver & Rio Grande Western, Denver, Colo.

Committee 8—Masonry: W. R. Wilson (chairman), assistant engineer, bridge department, Santa Fe, Chicago; M. S. Norris (vice-chairman), resident engineer, Baltimore & Ohio, Pittsburgh, Pa. Mr. Wilson will succeed C. B. Porter, assistant chief engineer, Chesapeake & Ohio, Richmond, Va.

Committee 14—Yards and Terminals: J. E. Hoving (chairman), special engineer to the president, Northern Pacific, St. Paul, Minn.; J. N. Todd (vice-chairman), superintendent of scales and work equipment, Southern, Washington, D. C. Mr. Hoving will succeed W. H. Giles, assistant chief engineer system—construction, Missouri Pacific, St. Louis, Mo.

Committee 16—Economics of Railway Location and Operation: H. B. Christianson, Jr. (vice-chairman), assistant engineer, Santa Fe, Chicago. Mr. Christianson, who has already assumed his new duties, succeeds W. B. Irwin, assistant to vice-president, operation, Great Northern, St. Paul, Minn.

Committee 17—Wood Preservation: W. F. Dunn, Sr. (chairman), tie and timber agent, Southern, Washington, D. C.; A. J. Loom (vice-chairman), general superintendent timber preservation, Northern Pacific, Brainerd, Minn. Mr. Dunn will succeed G. B. Campbell, tie and timber agent, Missouri Pacific, St. Louis, Mo.

Committee 22—Economics of Railway Labor: R. J. Gammie (chairman), chief engineer, Texas & Pacific, Dallas, Tex.; D. E. Rudisill (vice-chairman), assistant chief engineer, maintenance of way, Central region, Pennsylvania, Pittsburgh, Pa. Mr. Gammie will succeed H. E. Kirby, cost engineer, Chesapeake & Ohio, Richmond, Va.

Committee 29—Waterproofing: T. M. von Sprecken (chairman), assistant to chief engineer, Southern, Washington, D. C.; L. J. Deno (vice-chairman), division engineer, Chicago & North Western, Escanaba, Mich. Mr. von Sprecken will succeed R. L. Mays, division engineer, New York, Chicago & St. Louis, Frankfort, Ind.

(Continued on page 170)

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Association News (Cont'd)

Bridge and Building Association

The next meeting of the Executive committee of the association will be held on Monday, March 10, at the Chicago Engineers' Club. The meeting has been scheduled for this date, which is one day in advance of the opening of the A.R.E.A. convention, to make it possible for members of the Executive committee to arrange attendance at both meetings during the same trip to Chicago. It will also be possible for them to view the exhibit of manufacturers' products that is to be held at the Coliseum concurrently with the A.R.E.A. convention.

Maintenance of Way Club of Chicago

The January meeting of the club was held at Eitel's restaurant, Chicago, on the evening of the 28th. The principal speaker was C. B. Bronson, maintenance of way assistant to vice-president, New York Central System, whose subject was "High Lights on Rail Problems."

At the next meeting, which will be held at the same place on February 25, the principal speaker will be H. M. McFarlane, president, National Railway Appliances Association. At the time of going to press the exact subject of Mr. McFarlane's address had not been established, although it was expected that he would, among other things, discuss the improvements that have been made in the machines, materials, devices and other products made by the member companies of the N.R.A.A. A comprehensive exhibit of such products will be presented by these companies at the Coliseum, Chicago, concurrently with the annual convention of the American Railway Engineering Association, March 11-13.

Metropolitan Maintenance of Way Club

The next meeting of the club will be held on February 28 in the Skyline room of the Hotel Shelburne, New York. The program, plans for which had not been completed at the time of going to press, will be preceded by a dinner beginning at 6:30 p.m.

National Railway Appliances Association

The thirty-fifth exhibition of the National Railway Appliances Association, which is to be held at the Coliseum,

Meetings and Conventions

American Railway Bridge and Building Association—Annual meeting, September 15-17, 1952, Conrad Hilton (Stevens) Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

American Railway Engineering Association—Annual Meeting, March 11-13, 1952, Chicago. Neal D. Howard, Secretary, 59 E. Van Buren street, Chicago 5.

American Wood-Preservers' Association—Annual meeting, April 22-24, 1952, Hotel New Yorker, New York. W. A. Penrose, Secretary-treasurer, 839 Seventeenth street, N. W., Washington 6, D. C.

Bridge and Building Supply Association—L. R. Gurley, Secretary, 201 North Wells street, Chicago 6.

Maintenance of Way Club of Chicago—Next meeting February 25. E. C. Patterson, Secretary-treasurer, Room 1512, 400 W. Madison street, Chicago 6.

Metropolitan Maintenance of Way Club—Secretary, 30 Church street, New York.

National Railway Appliances Association—Robert A. Carr, Secretary, 310 South Michigan avenue, Chicago 4; Lewis Thomas, Assistant Secretary, 59 East Van Buren street, Chicago 5.

Railway Tie Association—Annual meeting, September 3-5, 1952, Roosevelt Hotel, New Orleans, La. Roy M. Edmonds, Secretary-treasurer, 912 Shell Building, St. Louis 3, Mo.

Roadmasters' and Maintenance of Way Association of America—Annual meeting, September 15-17, 1952, Conrad Hilton (Stevens) Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

Track Supply Association—Lewis Thomas, Secretary, 59 E. Van Buren street, Chicago 5.

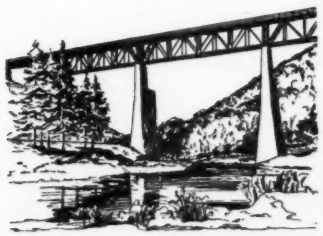
Chicago, March 10-13, concurrently with the annual convention of the American Railway Engineering Association, promises to be one of the largest in the history of the association. At the time of going to press 114 manufacturers had contracted to occupy 261 booths. It is expected that by the time the exhibition opens all available space in the Coliseum will be used to exhibit tested and improved equipment, materials and devices designed to help railroad officers control present-day high costs and overcome shortages of labor. While there will be considerable emphasis in the exhibit on materials and appliances used by the track and bridge and building departments, it will also include equipment for handling fuel and lubricating oils, as well as many other items of interest to mechanical and purchases and stores officers.

Of the exhibitors that have signed for space to date 20 have never before participated in an N.R.A.A. exhibition. These new exhibitors, together with those who have exhibited before, are expected to show many new and improved products. The attractiveness of the exhibit will be enhanced by special decorations of russet and gold in the exhibition hall.

Inquiries for information regarding the exhibit and the space available should be addressed to Lewis Thomas, director of exhibits, National Railway Appliances Association, 59 E. Van Buren street, Chicago.

Roadmasters' Association

The next meeting of the Executive committee will be held at the Palmer House in Chicago on March 10, which will be a day in advance of the opening of the A.R.E.A. convention. It is planned to adjourn this meeting about noon to give the members an opportunity to inspect the manufacturers' exhibit that is to be held at the Coliseum in connection with the A.R.E.A. convention. In the interest of expediting the preparation of the six technical committee reports that are to be presented at the convention of the Roadmasters' Association in September, President A. H. Whisler has arranged for a meeting of these committees to be held during the A.R.E.A. convention. These meetings will extend over the three-day period, March 11-13, with two committees meeting on each of these days. A studio room in the Palmer House will be provided for this purpose.



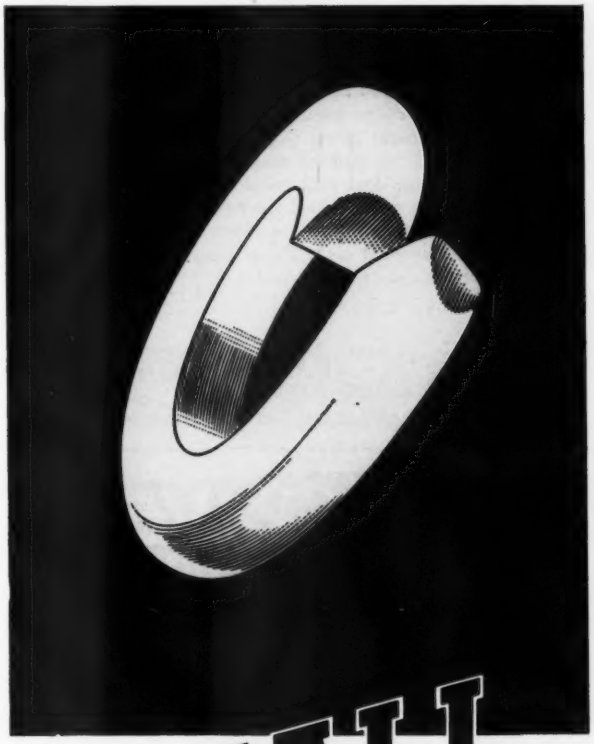
Supply Trade News

General

Blackmer Pump Company has announced the appointment of additional distributors, who are stocking Blackmer Pump Company's entire product line and service parts. They include the Howard Supply Company, Oakland, Cal., and the Hetler Equipment Company, Grand Rapids, Mich.

The Trackson Comapny, Milwaukee, Wis., producer of tractor-mounted machines, has become a wholly owned subsidiary of the **Caterpillar Tractor Company,** Peoria, Ill. **Louis B. Neumiller,** president of Caterpillar, will be chairman of the board of directors of the Trackson Company, which will also include **Walter H. Stiemke,** president of Trackson. Mr. Stiemke and **L. E. Dauer,** vice-president of Trackson, will continue in their present administrative capacities.

(*Continued on page* 172)



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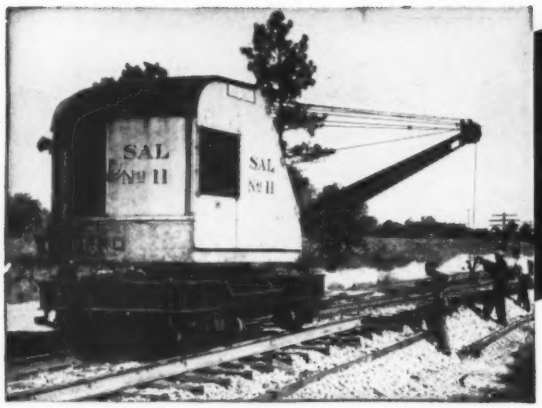
HI-DUTY
SPRING WASHERS

Made especially for railroad service according to the exact dimensions specified by the A.S.A. and the A.S.M.E.

BEALL TOOL DIVISION Hubbard & Co. East Alton, Ill.

Spring Washer Specialists for 30 years



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Burro Cranes Have:

- Fast travel speeds—up to 22 M.P.H.
- Draw Bar Pull of 7500 lbs. (often eliminates need for work train or locomotive).
- Elevated Boom Heels for working over high sided gondolas.
- Short tail swing—will not foul adjoining track.
- Low overall height—Burro can be loaded and worked on a standard flat car.

We call Burro Cranes "Railroad Specialists" because they do so many railroad jobs so well. Track work, bridge work, bulk materials handling, Mechanical Stores Department, material handling with or without magnet, are only a few jobs Burro does with speed and economy. Burro Cranes are designed for railroad work—not adapted to it. Watch a Burro work and see why it's called on to do so many jobs by most of the country's railroads.

Burro WORK Power means more EARNING Power

CULLEN-FRIESTEDT CO.
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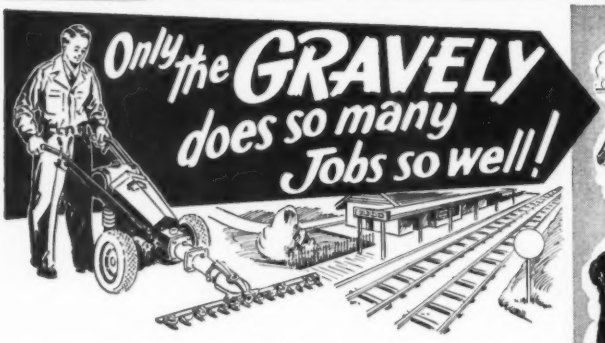
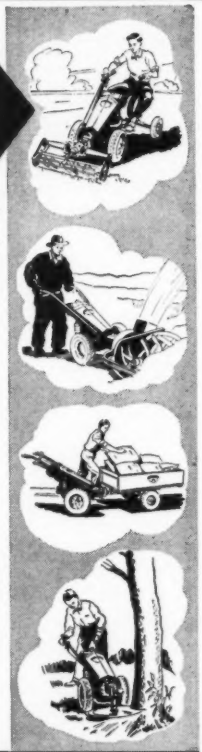




One powerful 5-HP Gravely Tractor offers a choice of 20 tools! . . . Does off-track mowing, platform sweeping, snow removal, lawn mowing. All grounds maintenance handwork is done with POWER – *faster, better!*

One Gravely Tractor with the proper attachments will make one man as effective as eight!

All-gear drive, power reverse. Works on steep slopes, rough ground. Railroad-tested for 31 years. Free Booklet, "Power vs Drudgery" tells how Gravely POWER frees your men for other work, increases efficiency, saves maintenance dollars. Write for it today!

Gravely Motor Plow & Cultivator Co.
BOX 242 DUNBAR, WEST VIRGINIA

Supply Trade News (Cont'd)

Products of the Trackson Company have been sold through Caterpillar dealers for the past 15 years.

Personal

Russell H. Coe has been appointed to represent the **Tapecoat Company,** Evanston, Ill., on this company's coal tar tape for pipe joint protection. Mr. Coe will represent the company in Ohio, West Virginia and western Pennsylvania, and will have headquarters in the Park Building, Pittsburgh 22, Pa.

Gene Thomas has been appointed district representative for sales district No. 6 of the **Frank G. Hough Company,** Libertyville, Ill., covering the states of Washington, Oregon, Idaho, Montana and Wyoming.

W. A. Rundquist has been appointed director of advertising and public relations for **Poor & Company,** Chicago. Mr. Rundquist will maintain his residence in Minneapolis, where he is also sales promotion manager for Pioneer Engineering Works, a subsidiary of Poor & Company.

H. W. Angell

H. W. Angell, for the past 13 years a member of the technical staff of **American Lumber and Treating Company,** Chicago, has been appointed technical director of the company and will assume responsibility for management of its technical department, laboratory and licensee quality-control. Mr. Angell joined the company as an apprentice following his graduation from the University of Idaho in 1938. He obtained his degree of Master in Forestry at Yale in 1940, returning to the company's Chicago laboratory as wood technologist. During 1945-1946 he served as assistant professor of forestry at Oregon State College. He is currently active in technical cooperation with the Department of Defense on projects involving the use of wood products in the rearmament program and as replacement material for scarce metals in civilian uses. Mr. Angell is an active member of the American Wood Preserver's Association, American Railway Engineering Association, American Society for Testing Materials, and the Forest Research Society.

Dearborn Chemical Company has appointed **H. G. Mastin** assistant to the vice president of its Eastern railroad division, to assume charge of railroad sales and service in the New England area. **N. E. Cornell,** formerly with the New York Central, has joined Dearborn and will work with Mr. Mastin as a service engineer.

R. P. Parshall, formerly manager of the Milwaukee branch of the **Cummins Diesel Sales Corporation,** Chicago, has joined the Cummins regional organization as regional manager of the Southeastern region, with headquarters at Atlanta, Ga.

E. M. Converse, senior vice president of **Dearborn Chemical Company,** Chicago, has retired after almost 50 years of service. Mr. Converse began his career in the Dearborn laboratory in 1902 and was assigned as a water treatment engineer in the sales department, Chicago, in 1908. He was named director of the specialty department in 1918, and industrial department manager in 1930. He was appointed a director in 1929, vice president in 1934, and senior vice president in 1949. Mr. Converse was responsible for the development of the company's No-Ox-Id rust preventive coatings and wrappers, and for 35 years was active in the oil and gas pipeline markets.

C. P. Moeller, has been appointed sales manager of trackwork activities for the **Wier Kilby Division** of the **Taylor Wharton Iron & Steel Co.** Mr. Moeller succeeds **R. F. Gordon,** who has retired after 39 years of service with the company. Mr. Moeller started his career with the Cincinnati Frog & Switch Co. in 1929, where he remained until 1931, when that company was acquired by the Wier Kilby Corporation. He returned to the Wier Kilby Division of Taylor Wharton in 1945 as assistant sales manager, after serving several years with the Griffin Wheel Company. Mr. Moeller will be located at the company's executive offices in Cincinnati.

Obituary

Howard Mull, vice-president in charge of sales, Warren Tool Corporation, whose headquarters were located in Chicago, died recently at the age of 63.

Trade Publications

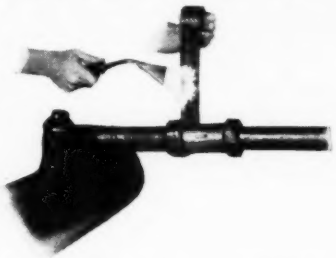
(To obtain copies of any of the publications mentioned in these columns, use postcards, page 157)

Rail-Flaw Detector—Branson Instruments, Inc., Stamford, Conn., has issued a folder presenting a complete description of its Audigage rail-flaw detector. Included in the folder is an explanation of the principles upon which operation of the detector is based, along with instruction for operating the detector and maintaining it in good condition. Current prices and complete specifications are also listed.

The ORTON
Torque-Control
CRANE
with GM Allison
Torque Converter
Shock-free, smoother, uninterrupted flow of power. The ORTON Torque-Control Crane provides the correct torque in the exact amount needed to move the load!
When the crane idles, the engine idles. The engine doesn't shake itself to pieces when it's doing no work!
REQUEST CATALOG #83
ORTON Crane and Shovel Co.
608 So. Dearborn Street
Chicago 5 • Illinois

More and more railroad maintenance men are depending on TAPECOAT to protect pipe joints and short pipe sections in underground service, at bridge crossings and wherever corrosion is a problem.

TAPECOAT is the coal tar protection in handy tape form. It comes in widths of 2, 3, 4, and 6 inches for spiral wrapping; and in widths of 18 and 24 inches for cigarette wrapping of large diameter pipe, tanks, etc.



Application is quick, easy, economical. Just a flash of a torch and TAPECOAT provides a perfect lasting bond to seal out the elements of corrosion.

TAPECOAT engineers have specialized in this protection for more than 10 years. Call on them to help you work out your individual requirements.

Write for full details

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Originators of the Coal Tar Tape for Pipe Joint Protection

1541 Lyons Street, Evanston, Illinois

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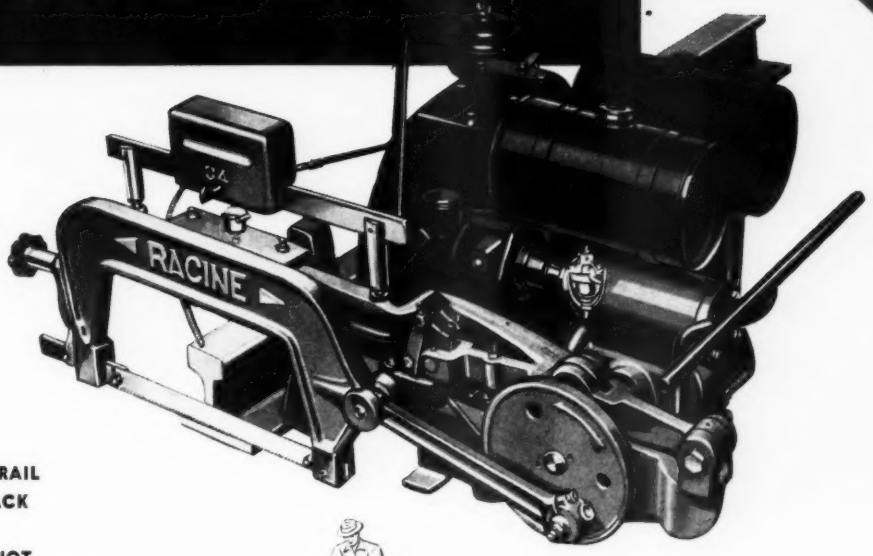
YOUR EXTRA EMPLOYEE THAT WORKS WITHOUT PAY

RACINE *Portable* RAIL SAW



- CROP RAIL IN TRACK
- WILL NOT SHATTER OR BURN RAIL ENDS
- CUT OFF ANY LENGTH DOWN TO 1/10"
- NO TRAFFIC INTERFERENCE

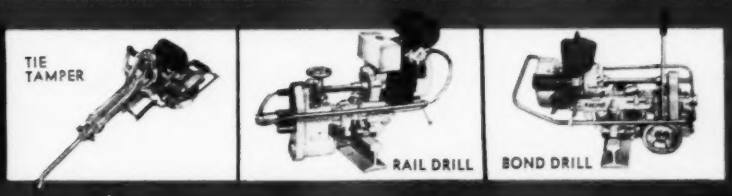
One man operates the RACINE Portable Rail Saw while it does the work of several hands. Designed specifically for cutting rail in track, it handles the job fast and dependably.

Cuts are smooth and accurate. Shattered and burned rail ends are eliminated. The possibility of rail failures from fractures that start with torch cutting or "nick and break" cropping is reduced.

Easily moved by two men, it does not hamper traffic. Operation is simple. Maintenance cost is low. Here is an "extra employee" you can rely upon for steady output under all conditions.

Write for new, 3-color catalog describing RACINE Railway Maintenance Machines.

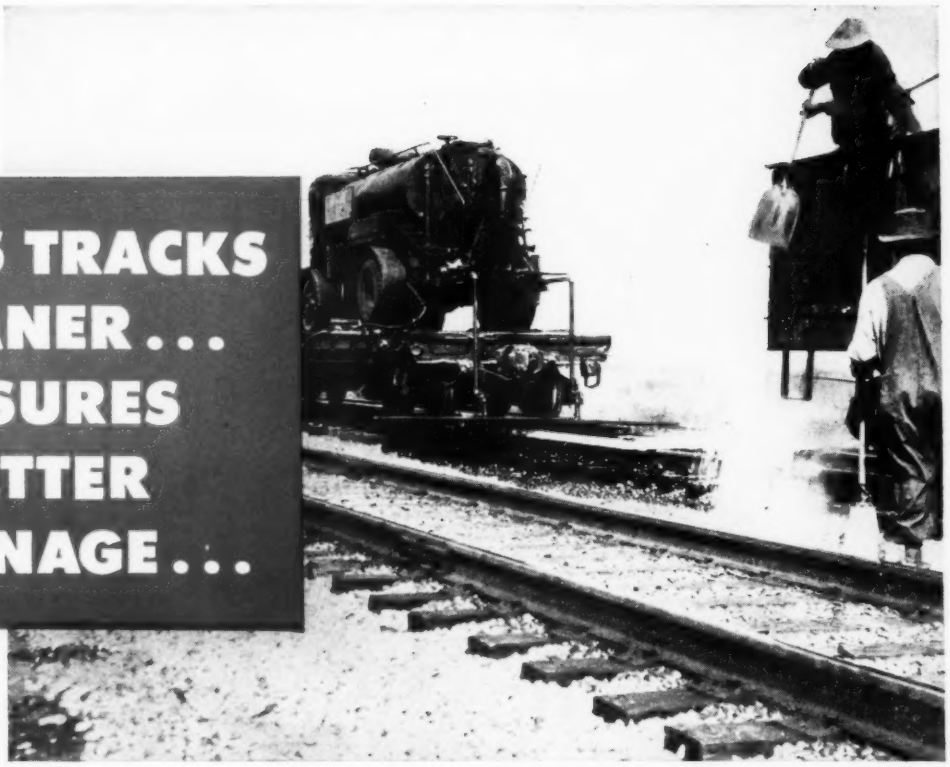
OTHER RACINE PORTABLE MACHINES



RACINE TOOL AND MACHINE COMPANY
1738 State Street • Racine, Wisc.

RACINE

KEEPS TRACKS CLEANER . . . ASSURES BETTER DRAINAGE . . .



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Texaco Asphalt forms a flexible ballast-seal that sheds water quickly, prevents fouling with dirt or cinders. Moreover, *Texaco Asphalt*-coated ballast *retains* its flexibility, does not crack under heavy traffic, and can be tamped even after long service.

You can be *sure*, if it's *Texaco Asphalt* – proved through nearly half a century of service on America's roofs, highways and railroads. A Texaco representative will gladly give you full details. Just call the nearest Railway Sales Office in New York, Chicago, San Francisco, St. Paul, St. Louis or Atlanta; or write:

The Texas Company, *Railway Sales Department*, 135 East 42nd St., New York 17, N. Y.

ALSO USE: *Texaco No. 24 Emulsified Asphalt* for your grouting mixtures to eliminate soft track. It assures longer lasting stability. *Texaco Rail Joint Lubrication* – spray or grease type. It prevents freezing, kinking, corroding and pulling apart.

TEXACO Asphalt for Coating Ballast

Faithfully yours 50 *for Fifty Years*

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